FASTEST GAMING PC EVER?
Falcon's FX-60-powered rig demolishes benchmark records!

150GB RAPTOR REVEALED!
We preview the must-have 10,000 rpm hard drive

SMALL, SLEEK & SPEEDY
Aopen's new mini-PC delivers big power in a tiny package!

MAXIMUM PC

MINIMUM BS • FEBRUARY 2006

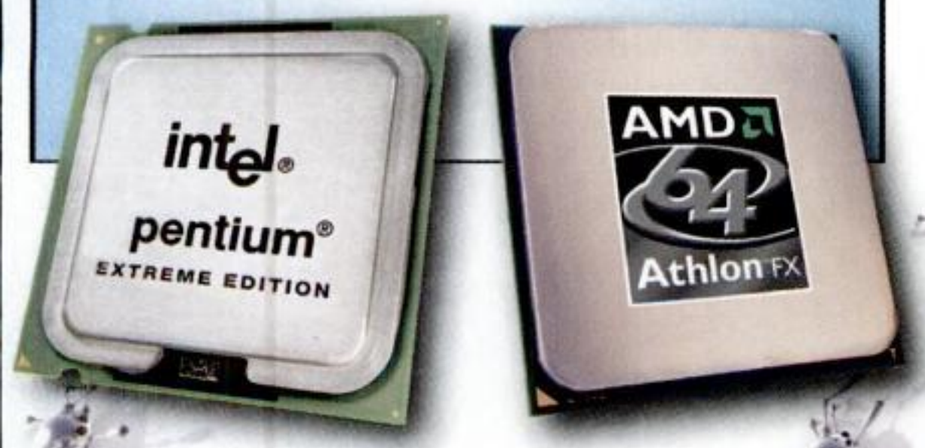
ARE BUGS *KILLING* YOUR PC?

Your computer isn't slow– it's just horribly infected!

How to terminate Internet nasties and make your PC run like new!

2006 CPU PREVIEW!

LAB TESTED: New Dual-Core CPUs from Intel & AMD



COOLING SHOWDOWN! AIR VS. WATER IN OUR BRUTAL HEAD-TO-HEAD

$7.99US $9.99CAN
02>
Future
MEDIA WITH PASSION
0 74470 03353 0

RESTORE OLD PHOTOGRAPHS: FIX YOUR PRINTS & NEGATIVES WITH OUR STEP-BY-STEP GUIDE!

Copyrighted material

Antec's all new P180

Copyrighted material

pure performance

WITHOUT **COMPROMISE**

This One

FK7X-LH8-CXX3

Antec

The Power of You

STAPLES Fry's Outpost.com amazon.com buy.com newegg

Copyrighted material

Looks *can* kill.

Especially with this kind of power!

AURORA™ m7700 MOBILE SYSTEM
STARTING AT: $2,099 [After $100 rebate]

Aurora m7700 features:

› Microsoft® Windows® XP Professional with Service Pack 2 ‹

› Up to the AMD Athlon™ 64 FX-57 Processor ‹

› NVIDIA® GeForce™ Go 7800 GTX PCI Express with 256 MB Graphics Card ‹

› Up to 2 GB Dual Channel DDR Memory at 400 MHz ‹

› Up to 240 GB (Dual 120 GB) Serial ATA Hard Drives ‹

› 17" Wide-UXGA LCD Display with Clearview® Technology ‹

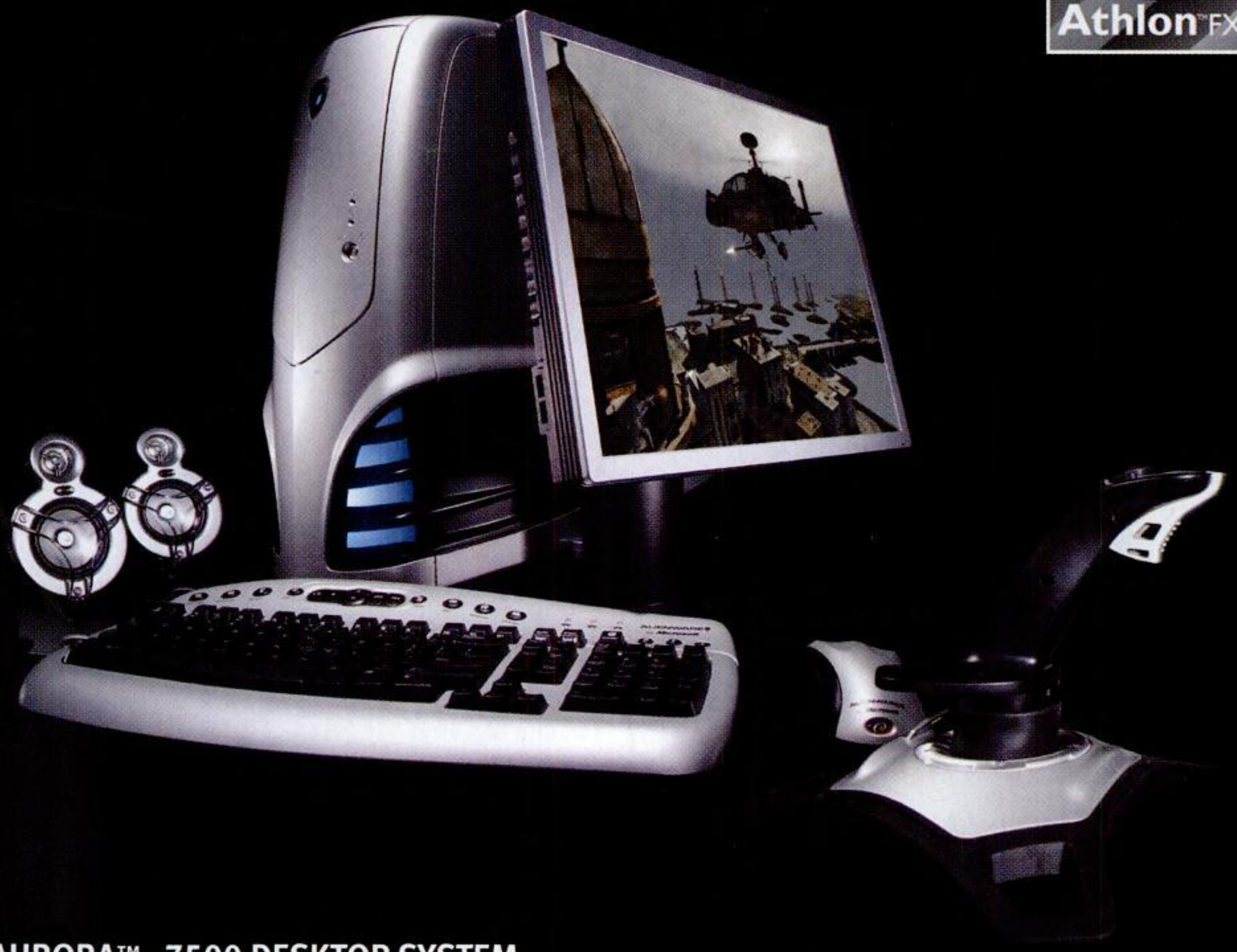
Exclusive Maximum PC rebate and Battlefield 2: Special Forces wallpaper available at: [254-3692]

www.alienware.com/maxpc **1-800-ALIENWARE**

Prices, configurations, and availability may change without notice. Taxes and shipping charges not shown. Alienware can not be held responsible for errors in photography or typography. Actual case may vary in design. Alienware, Alienware Alien head logo, Aurora and Aurora m are registered trademarks or trademarks of Alienware Corporation. AMD the AMD Arrow logo, AMD Athlon, and combinations thereof, are trademarks of Advanced Micro Devices, Inc. Battlefield 2 and Battlefield 2: Special Forces are trademarks of Digital Illusions CE AB. EA and the EA logo are trademarks of Electronic Arts inc in the US and/or other countries. Published and distributed by Electronic Arts. EA™ is an Electronic Arts™ brand. All other registered trademarks and trademarks are the property of their respective owners. *Price shown includes keyboard and mouse. Cordless joystick, speakers, and monitor not included.

Copyrighted material

Alienware recommends Microsoft® Windows® XP Professional.



AURORA™ 7500 DESKTOP SYSTEM
STARTING AT: $1,899* [After $100 rebate]

Aurora 7500 features:

› Microsoft® Windows® XP Professional with Service Pack 2 ‹

› Up to the AMD Athlon™ 64 FX-57 Processor ‹

› SLI Dual NVIDIA® GeForce™ 7800 GTX PCI Express Graphics Cards ‹

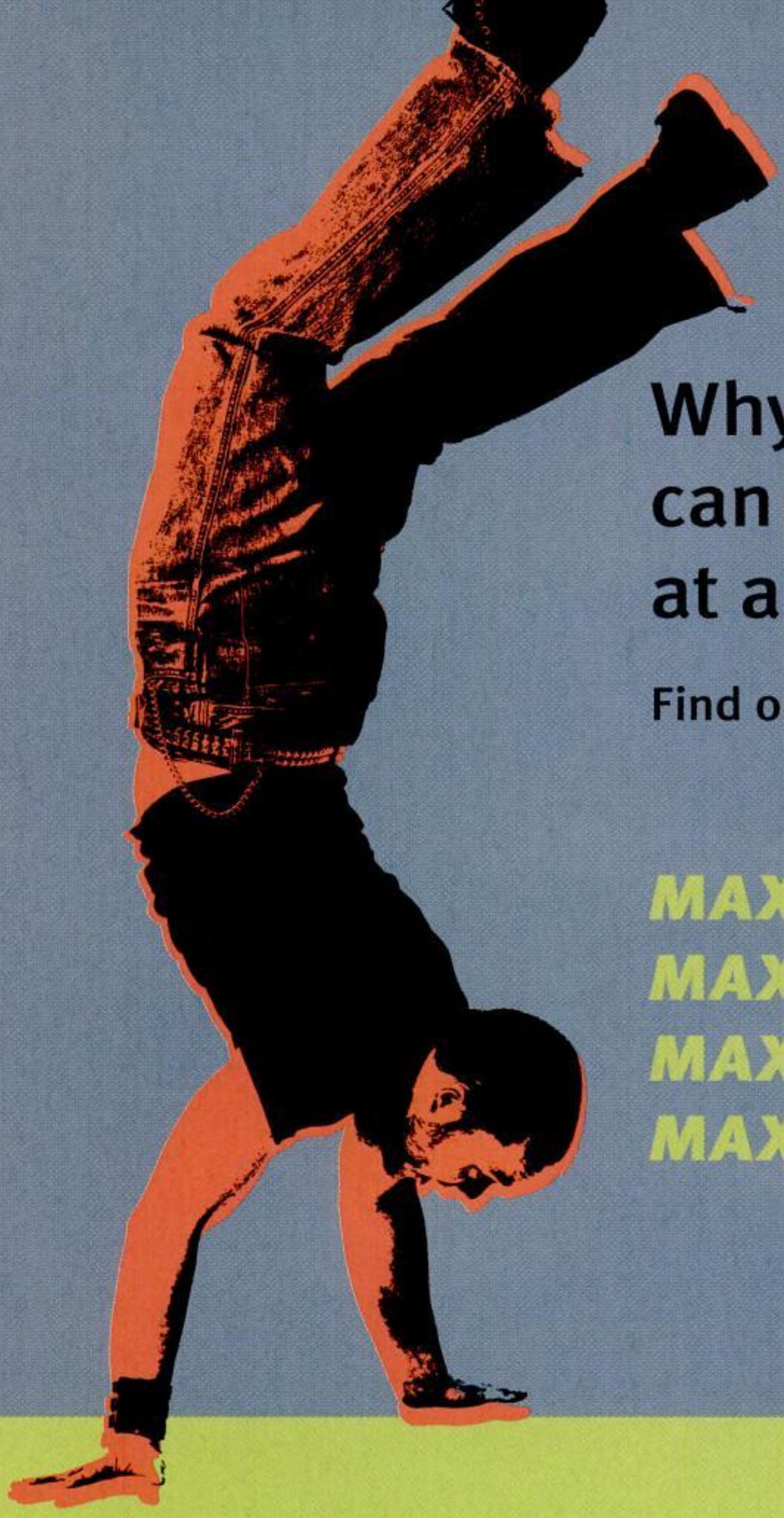
› Up to 1 TB (Dual 500 GB) Serial ATA-II 3 GB 7200 RPM Hard Drives with 32 MB Cache ‹

› Creative Sound Blaster® X-Fi® Hi-Def 7.1 Surround Sound ‹

› Alienware® Liquid Cooling Technology ‹

ALIENWARE®
THE ORIGINAL ULTIMATE GAMING MACHINE

Copyrighted material



Why buy Pre-N, when you can get MAXg performance at about half the cost?

Find out how we do it at www.usr.com/maxg

MAXimum range
MAXimum performance
MAXimum security
MAXimum simplicity

MAXg™

USRobotics means smart wireless.

- **MAXimum range.** Up to 50% better range than standard 802.11g products.
- **MAXimum performance.** Delivers speeds up to 125 Mbps. Maintains compatibility with standard 802.11b and 802.11g devices.
- **MAXimum security.** Built-in high security encryption (WPA, WPA2) and authentication (MAC, 802.1x) plus SPI Firewall.
- **MAXimum simplicity.** Set up in less than five minutes. Fully secure within ten minutes.

Available at:

CDW · COMPUSA · MICRO CENTER · Fry's · TigerDirect.com · Insight · newegg.com

USRobotics®

Copyrighted material

Contents

Ed Word

We Are Pack Rats

Please send feedback and lemon tarts to ***will@maximumpc.com.***

I don't know what you guys have been doing for the last three months, but at *Maximum PC*, we spent most of the winter prepping for the most dreaded of events—moving to a new office. That's right, we've packed up the Maximum PC Lab, cleaned out our desks, and vacated this magazine's original home for swank new digs on the south side of town.

After about 90 days of packing and cleaning, I've come to one conclusion. We, the editors of *Maximum PC* magazine, are unbelievable pack rats. Cleaning out the Lab was like excavating a technological archeology site. The deeper we dug, the further into the past we went, and along the way we found tons of once-lustworthy gear.

We unearthed a veritable cornucopia of classic PC parts. Josh found the first water-cooling kit we ever reviewed and a pair of 8GB Cheetah hard drives. Gordon found an ancient dual-GPU ATI videocard, the first MP3 player we ever laid hands on—the original Diamond Rio—and the first nForce prototype we ever tested. But I think I pulled the ultimate booby prizes out of my stash—a copy of *Daikatana*, and nVidia's first 3D accelerator, the NV1. Both are still wrapped in their original packaging. We also found about a dozen Voodoo cards, an old Obsidian workstation 3D accelerator, and damn near a dozen dead 10GB to 20GB hard drives.

EDITOR'S PICKS FOR FEBRUARY 2006

- Next-gen dual-core preview – *page 30*
- Photo-restoration guide – *page 38*
- DLP white paper – *page 54*

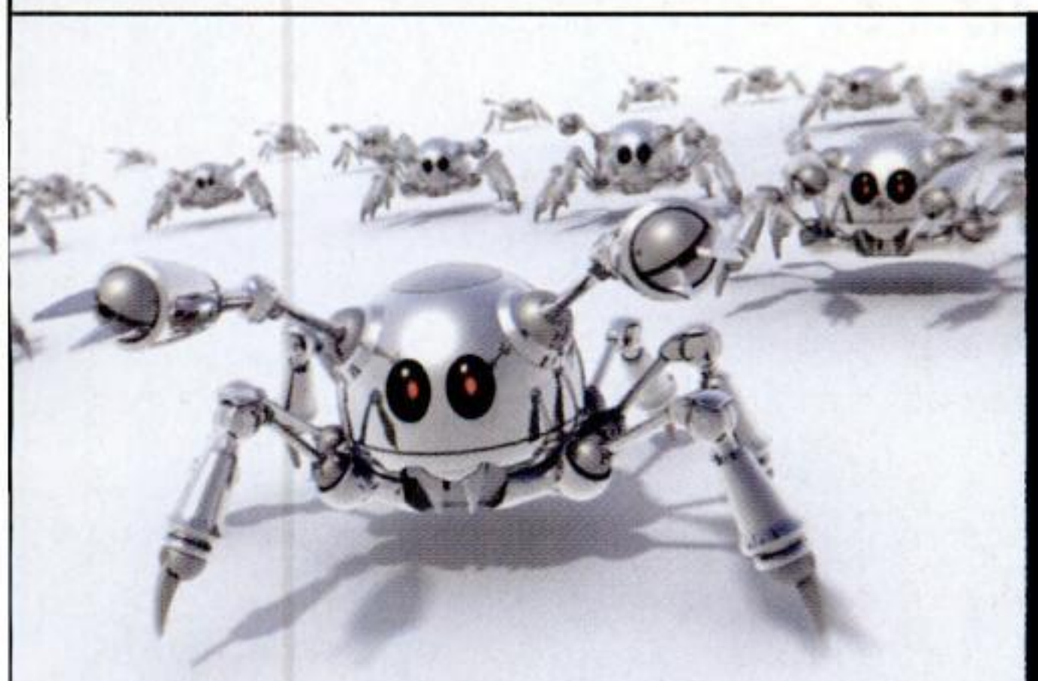
Sadly, yesterday's treasures are today's trash, and while we disposed of a ton of old hardware, visitors to Maximum PC HQ will see some of this classic gear decorating the walls of our new place.

Long-time readers will recall that this is actually the third iteration of the Maximum PC Lab, we'll call it Lab 3.0. I can, without a doubt, tell you that Lab 3.0 is the most kick-ass version we've had to date. It's nearly twice the size of Lab 2.0; is equipped with state-of-the-art, fully adjustable benches; is climate controlled—we maintain a constant 70 F at all times—and has more power and network connections than we've ever had previously. It's more of computer geek's paradise than ever before.

We'll take you on a grand tour of the new Lab in a future issue, but for now I'm off to finish unpacking my bench.

Will Smith

Features

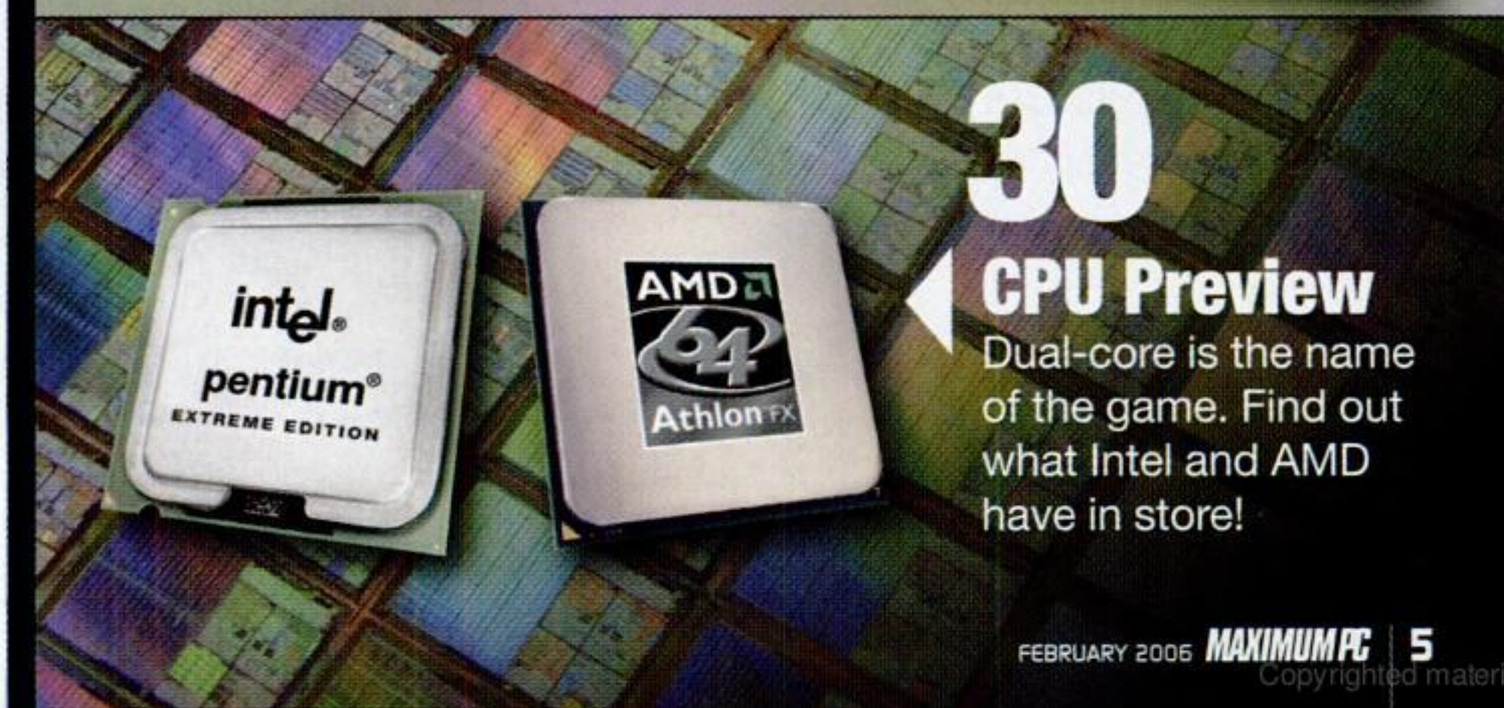


22 Squash PC Bugs

Rid your rig of viruses, worms, and other nasties, and learn how to keep it safe from future infestation.

38 Photo Restoration

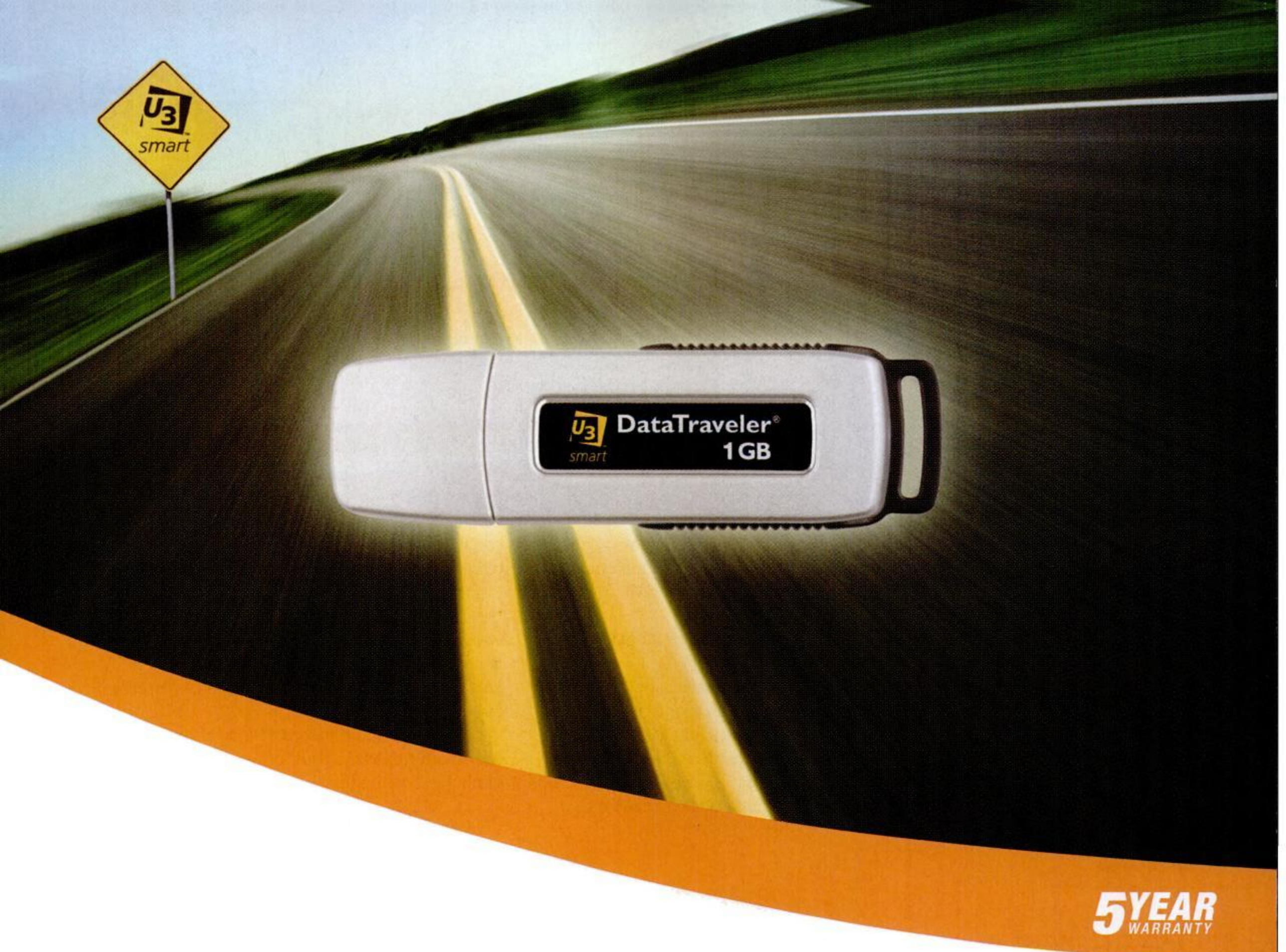
Learn how to digitally fix, preserve, and archive all your film prints and negatives.



30 CPU Preview

Dual-core is the name of the game. Find out what Intel and AMD have in store!

Copyrighted material



Life is an open road. *Enjoy the drive.*

Introducing the revolutionary U3 DataTraveler Smart Drive.

It might look like an ordinary USB Flash drive but it's much more than storage – it's freedom.

Kingston's U3 Smart drive takes mobile storage to new levels, letting you launch and run U3 software programs while carrying your data on one convenient device that fits on your keychain.

Make it your own by selecting programs from such categories as communication, productivity, games, photo, file synchronization and security. Download the applications at U3.com, then run them from the drive itself. Now you have the freedom to easily move between PCs.

For your safety today and down the road, U3 DataTraveler offers password protection, 24/7 tech support and a five-year warranty. Visit **kingston.com/U3** for details or purchase from one of our partners.

buy.com newegg.com TigerDirect.com

Kingston TECHNOLOGY
COMMITTED TO MEMORY®

ISO 9001:2000 SGS

Please note: Some of the listed capacity is used for formatting and other functions and thus is not available for data storage. For more information, please consult Kingston's Digital Media Guide at kingston.com/Digital_Media_Guide. ©2005 Kingston Technology Company, Inc. 17600 Newhope Street, Fountain Valley, CA 92708 USA. All rights reserved. All trademarks and registered trademarks are the property of their respective owners.

Copyrighted material

MAXIMUM PC

EDITORIAL
EDITOR IN CHIEF **Will Smith**
MANAGING EDITOR **Katherine Stevenson**
EXECUTIVE EDITOR **Michael Brown**
SENIOR EDITOR **Gordon Mah Ung**
SENIOR EDITOR **Josh Norem**
SPECIAL PROJECTS EDITOR **Steve Klett**
EDITORIAL ASSISTANT **Claude McIver**
EDITOR EMERITUS **Andrew Sanchez**
CONTRIBUTING WRITERS **Gord Goble, Tom Halfhill, Thomas McDonald**

ART
ART DIRECTOR **Natalie Jeday**
ASSOCIATE ART DIRECTOR **Boni Uzilevsky**
PHOTO EDITOR **Mark Madeo**
ASSOCIATE PHOTOGRAPHER **Samantha Berg**
COVER ARTIST **Oliver Wolfson**

BUSINESS
PUBLISHER **Bernard Lanigan**
646-723-5405, blanigan@futureus-inc.com
SOUTH WESTERN AD DIRECTOR **Dave Lynn**
949-360-4443, dlynn@futureus-inc.com
SOUTH WESTERN AD MANAGER **Issac Ugay**
562-983-8018, iugay@futureus-inc.com
NORTH WESTERN AD DIRECTOR **Stacey Levy**
925-964-1205, slevey@futureus-inc.com
EASTERN AD DIRECTOR **Anthony Danzi**
646-723-5453, adanzi@futureus-inc.com
EASTERN AD MANAGER **Larry Presser**
646-723-5459, lpresser@futureus-inc.com
ADVERTISING COORDINATOR **Jose Urrutia**
415-656-8313, jurrutia@futureus-inc.com
MARKETING MANAGER **Cassandra Magzamen**
MARKETING COORDINATOR **Tara Wong**

PRODUCTION
PRODUCTION DIRECTOR **Richie Lesovoy**
PRODUCTION COORDINATOR **Dan Mallory**

CIRCULATION
CIRCULATION DIRECTOR **Stephanie Flanagan**
FULFILLMENT MANAGER **Angela Martinez**
DIRECT MARKETING SPECIALIST **Janet Amistoso**
NEWSSTAND COORDINATOR **Alex Guzman**
BILLING AND RENEWAL MANAGER **Betsy Wong**

FUTURE US, INC
4000 Shoreline Court, Suite 400, South San Francisco, CA 94080
www.futureus-inc.com

PRESIDENT **Jonathan Simpson-Bint**
VICE PRESIDENT/CFO **Tom Valentino**
VICE PRESIDENT/CIRCULATION **Holly Klingel**
GENERAL COUNSEL **Charles Schug**
PUBLISHING DIRECTOR/GAMES **Simon Whitcombe**
PUBLISHING DIRECTOR/MUSIC AND TECH **Steve Aaron**
PUBLISHING DIRECTOR/BUSINESS DEVELOPMENT **Dave Barrow**
EDITORIAL DIRECTOR/TECHNOLOGY **Jon Phillips**
EDITORIAL DIRECTOR/MUSIC **Brad Tolinski**
DIRECTOR OF CENTRAL SERVICES **Nancy Durlester**
PRODUCTION DIRECTOR **Richie Lesovoy**

Future
MEDIA WITH PASSION

Future US Inc. is part of Future plc. Future produces carefully targeted special-interest magazines for people who share a passion. We aim to satisfy that passion by creating titles offering value for money, reliable information, smart buying advice and which are a pleasure to read. Today we publish more than 150 magazines in the US, UK, France and Italy. Over 100 international editions of our magazines are also published in 30 other countries across the world.

Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR).

FUTURE plc
30 Monmouth St., Bath, Avon, BA1 2BW, England
www.futureplc.com
Tel +44 1225 442244

NON EXECUTIVE CHAIRMAN: **Roger Parry**
CHIEF EXECUTIVE: **Greg Ingham**
GROUP FINANCE DIRECTOR: **John Bowman**
Tel +44 1225 442244
www.futureplc.com

REPRINTS: For reprints, contact Ryan Derfler, Reprint Operations Specialist, 717.399.1900 ext. 167
or email: futurenetworkusa@reprintbuyer.com

SUBSCRIPTION QUERIES: Please email maxcustserv@cdsfulfillment.com or call customer service toll-free at 800.274.3421

Contents

Departments

Quick Start New dual-graphics chipsets refuse to play nice.....8

Head2Head Which is the better cooling method: water or air? 14

WatchDog Maximum PC takes a bite out of bad gear 16

How To Recover deleted files.....49

Ask the Doctor Diagnosing and curing your PC problems 52

R&D Find out what makes a DLP display tick 54

In the Lab One stubborn editor finally makes the dual-core leap 58

In/Out You write, we respond 94

Rig of the Month Direct from the Delta Quadrant 96

60

Reviews

Small-formfactor PC
AOpen Mini PC.....60

Desktop PC Falcon Northwest
Mach V.....62

Desktop PC Cyberpower
Gamer Ultra 8500 SE 63

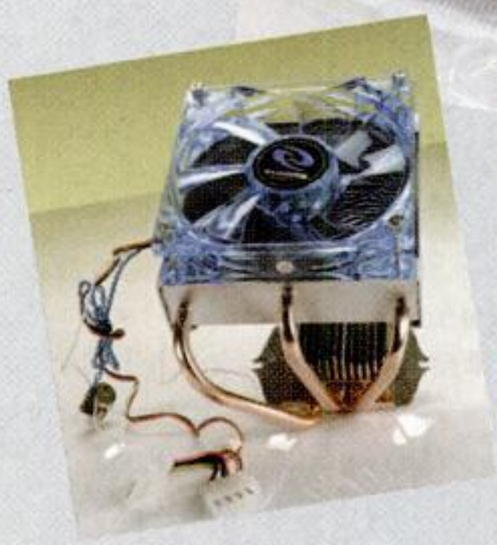
Videocards Sapphire Radeon X800 GTO Ultimate; ATI All in Wonder X1800 XL 64

Hard drives Maxtor Diamondmax 11; Seagate 7200.9 Barracuda 66

Heatsinks Raidmax Glacier; Arctic Cooling Freezer 64 Pro.....68

Digital SLR camera
Canon EOS 5D.....70

64



68

5.1 audio encoder
Creative Home Theater DTS-610.....72

Game controller Xbox 360 Controller.....72

PC enclosures
Silverstone TJ07; Antec P150 74

76

Gaming

Stubbs the Zombie 76

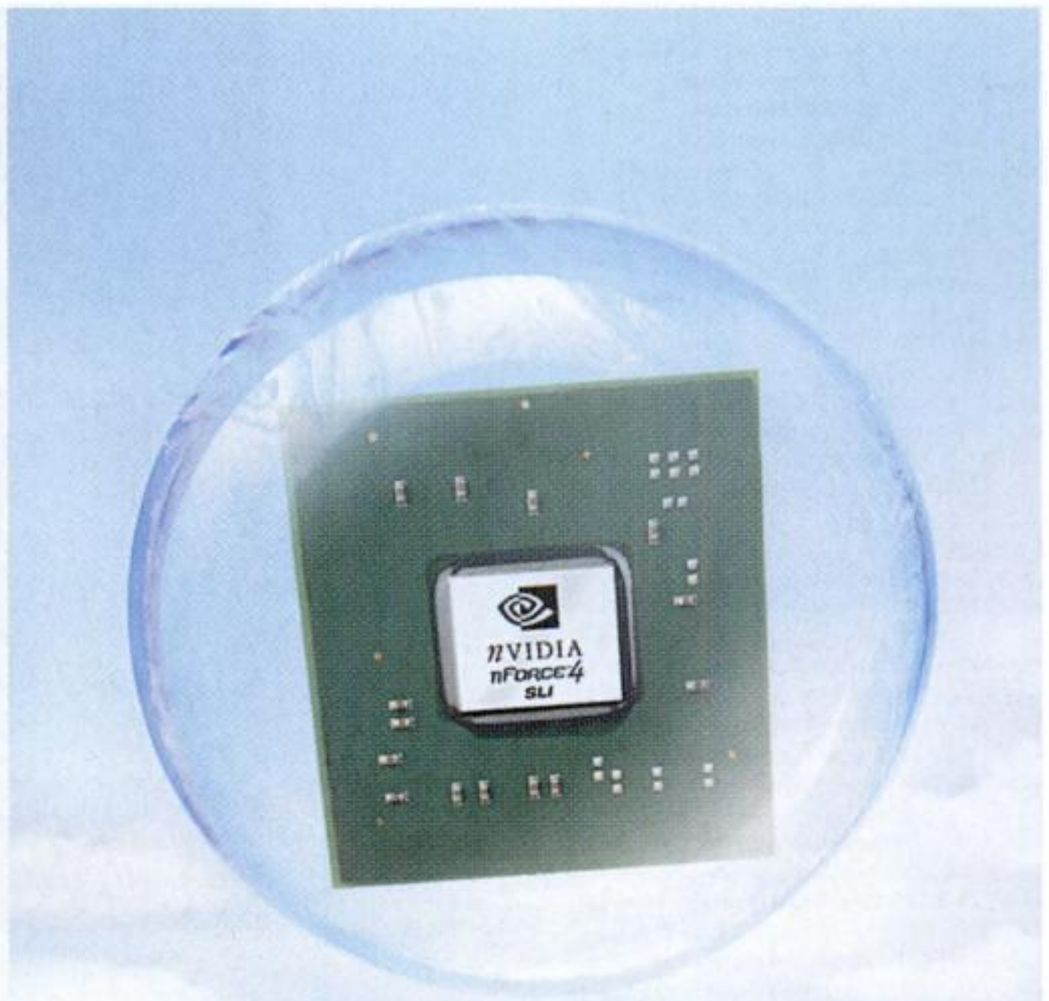
Battlefield 2: Special Forces 76

The Movies 77

Copyrighted material

Intel, VIA Push Dual Graphics Card Chipsets

New dual-videocard chipsets from Intel and VIA won't work with nVidia's SLI, making a "universal" dual-graphics-card chipset that much further out of reach



nVidia won't certify other manufacturers' chipsets to run its dual-card SLI. This "in the bubble" isolationist approach isn't surprising, given the cutthroat nature of the industry.

The world of motherboard chipsets that support dual graphics cards is getting larger but, sadly, no easier for consumers who want a one-size-fits-all solution.

Intel's new high-performance 975X chipset, for example, supports dual x8 PCI-E graphics cards, but don't expect to fill those slots with a pair of GeForce cards. Despite rumors of the chipset being the first to support both nVidia's SLI and ATI's CrossFire, 975X currently supports only ATI's CrossFire mode for 3D gaming.

VIA's new K8T900 chipset for the Athlon 64 series claims compatability with "Industry standard implementation for dual graphics card support," but it turns out that's limited to VIA's own MultiChrome-based graphics cards, not nVidia nor ATI cards.

CAN'T WE ALL JUST GET ALONG?

When asked, Intel officials referred us to nVidia for questions about SLI support. nVidia officials would only say that the 975X is not a certified chipset. In other words, there will be no SLI for Intel lovers unless you buy an nForce4 Intel board.

For those hoping for a dual-card standard, industry analyst Jon Peddie said you better not hold your breath. "You're not going to get a standard," said Peddie, founder of Jon Peddie Research. "There's no conspiracy involved, it's just the practicality of doing business." Peddie said nVidia might be reluctant to certify its videocards to work in all motherboards because that means it would have to take on the additional cost of tech support and certification for those boards. Peddie added that he doesn't see this as a problem because dual-graphics gaming isn't something that appeals to a mass audience, given the cost of purchasing two high-end videocards.

Rahul Sood, chief technology officer at Voodoo Computers, admits that a uniform standard would let PC companies cut down on inventory and that settling on one chipset or motherboard would make things easier for him and his competitors. Fortunately, Sood said, Voodoo has pretty much settled on a standard right now—nVidia's SLI chipsets. "Generally speaking, nVidia makes the best chipset and has a solid, stable, tested, and true platform," he said.

Sood said that for customers who want systems using ATI's dual graphics cards, Voodoo is recommending they use nVidia's chipsets as well. "I would say the majority of gaming companies will be running CrossFire on an nVidia chipset. It seems weird but it's great PR for nVidia."

That doesn't mean SLI on 975X is out of the question. One Intel insider griped to *Maximum PC* that SLI support in 975X could be accomplished by a simple driver update from nVidia. But, the insider confided, that's unlikely without a large PC OEM or two putting pressure on the videocard maker.

CHIPSETS UP CLOSE

CHIPSET	Intel 975X	VIA K8T900
CPU SUPPORT	Pentium D, Pentium Extreme Edition, Pentium 4, Pentium 4 Extreme Edition, Celeron	Athlon 64, Athlon 64 X2, Athlon 64 FX
FSB SUPPORT	800MHz, 1066MHz	N/A
RAM	Dual-channel DDR2/667 with Intel Performance Acceleration Technology	Dual-channel DDR400
GRAPHICS SUPPORT	Single x16 PCI-E or dual x8 PCI-E configuration	Single x16 PCI-E or dual x8 PCI-E configuration
PCI-E LANES	16 in north bridge, 6 in south bridge	20 in north bridge, 2 in south bridge
SATA 3G SUPPORT	Yes, four ports in ICH7R	Yes, four ports with VT8251
INTERCONNECT SPEED	2GB/s	N/A

Copyrighted material

Intel Announces Next-Gen Transistor Breakthrough

New tech should offer more power with less heat consumption

Intel is claiming a major breakthrough in the field of transistor technology: a new prototype transistor that could allow a 50 percent increase in processing speed while consuming just one-tenth the power used by today's silicon transistors.

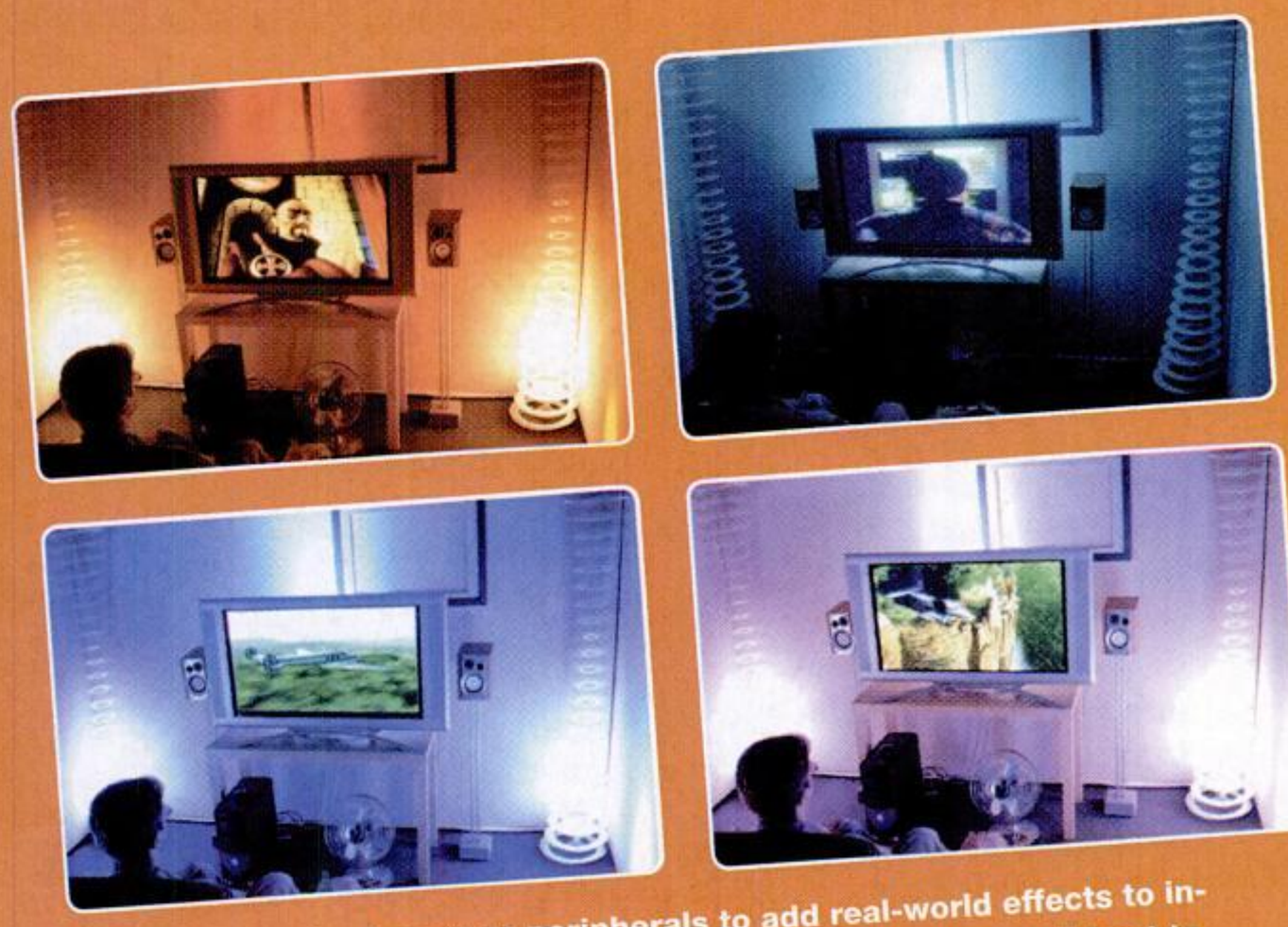
According to Intel, the new prototype transistor is made from indium antimonide—a chemical compound that shares physical properties with silicon. Furthermore, it's reported to be the smallest transistor ever invented, and operates at voltages that are roughly half of today's transistors. The transistor's small size and power-sipping nature could allow Intel to significantly increase transistor density, and therefore processing speed. If you're interested in pre-ordering a processor made with this technology, we have good news: The transistors aren't expected to show up for about nine years, so you have plenty of time to save your nickels.

HP Makes Demands for Blu-ray

Industry heavyweight HP has been an ardent Blu-ray supporter, but it looks like the honeymoon is over. HP could swing to HD-DVD if Blu-ray doesn't adopt two features that HP is demanding.

The first feature is called Mandatory Managed Copy, which the Blu-ray group has agreed to include. This feature lets people copy DVDs legally and stream content over a home network. The second feature on HP's wish list is called iHD, an interactive menu interface that's included in the HD-DVD spec. HP wants the feature to minimize the impact the format war will have on home users—the more features supported by both standards, the better. Blu-ray is currently set to use a Java-based interface, setting the stage for an even bloodier format war.

Cool or Crap? Philips Announces amBX Light and Sound System for "Interactive Gaming"



The amBX technology uses peripherals to add real-world effects to in-game action. Twin coils pulse with light, sound, and even emit heat to coincide with what's on the screen. Might be cool, or it might suck royally. We'll find out in Q4 of 2006.

TOM HALFHILL

Dual-Core CPUs Level the Playing Field

It's fun to watch a David-vs-Goliath contest, especially when the bystanders win the spoils. AMD's comeback against Intel is astonishing, and we're all winners, because we're getting better processors. But how long can it last?

Newbies might not realize that AMD wasn't always a sharp-eyed stone slinger. A few years ago, the company was nearly on the rocks. Intel was introducing speed-demon x86 processors that AMD couldn't match and a new CPU architecture (Itanium) that AMD was legally forbidden to clone. AMD was hemorrhaging money and market share.

Then AMD fought back with powerful new microarchitectures (the K7 and K8) and 64-bit x86 extensions. AMD recognized the folly of reckless clock-speed inflation and was the first to design a well-integrated multicore x86 processor. Meanwhile, Intel bet the farm on overheated hyper-pipelines and costly Itanium chips, then scrambled to match AMD's multicore coup with a dual-core kludge. Today, AMD competes strongly in the PC market and is making surprising inroads into the server market as well.

Intel, however, still has two big advantages. First, it's a much larger company with greater engineering resources. Second, Intel has more fabs and is always the first to roll out next-generation fabrication technology, which virtually guarantees a manufacturing edge.

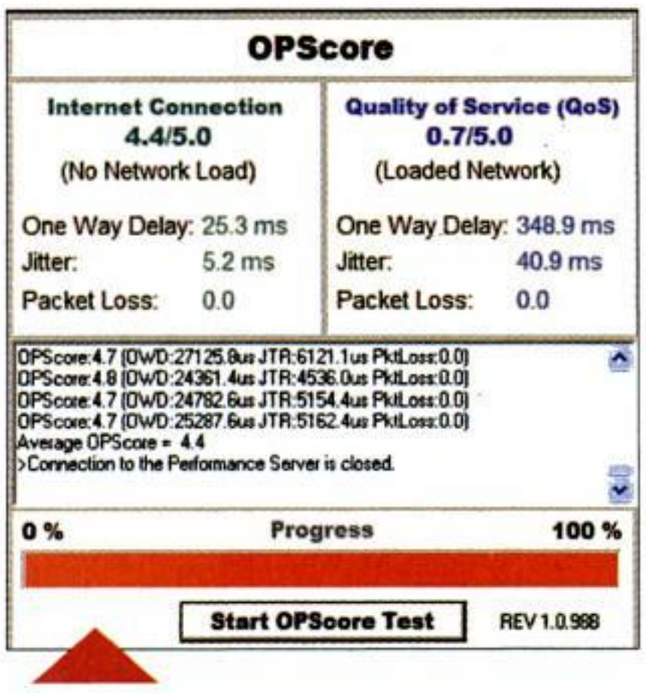
In particular, Intel has the resources to develop different x86 cores for different markets, such as the lower-power Banias/Dothan microarchitecture for mobile PCs and the higher-throughput NetBurst microarchitecture for desktop PCs and servers. By contrast, AMD always tries to stretch a single microarchitecture across multiple markets, despite the widening power/performance requirements for PCs (especially mobile PCs) and servers.

But now the multicore revolution is changing the rules. It's becoming practical again to address the whole market with a single microarchitecture. A smaller, simpler core is easier to replicate. A low-power x86 core could be suitable for a single-core mobile processor, replicated two or four times for a desktop processor, and replicated four or eight times for a server processor. Indeed, that's what Intel is doing: recycling its power-efficient mobile design to create multicore desktop and server processors.

AMD can do that, too. Intel still enjoys a manufacturing edge, but by reducing the advantage of Intel's engineering resources, AMD might be able to knock the giant down a peg or two.

Tom Halfhill was formerly a senior editor for Byte magazine and is now an analyst for Microprocessor Report.

Copyrighted material



Ubisoft's *OPScore* measures your net connection's performance in online games.

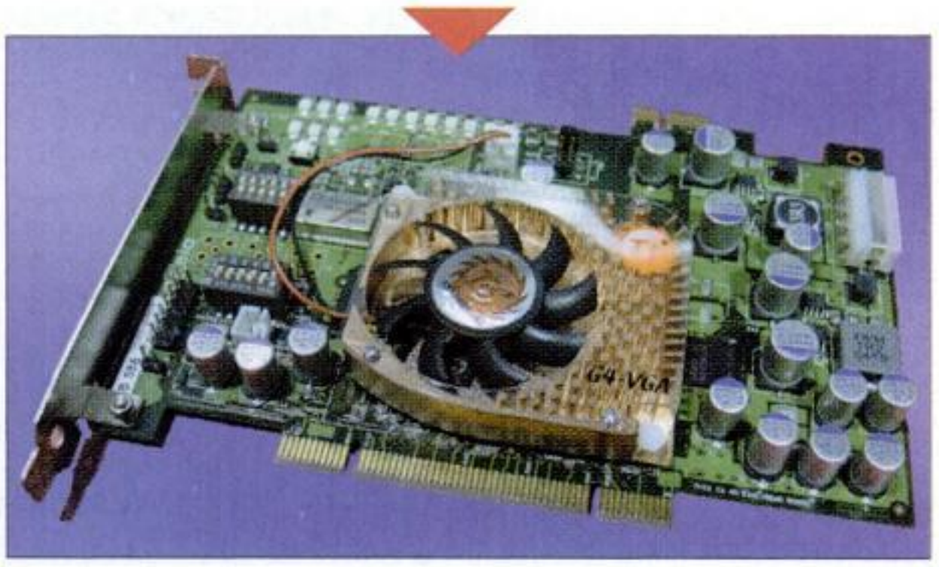
Got Lag?

Ubisoft has launched an Internet-connection benchmark named *OPScore*, which stands for Online Playability Score. It's actually a clever ruse to push the company's StreamEngine router-optimization technology, but it nonetheless allows you to see how your connection holds up to the benchmark's withering assault. Note: You must be running *Internet Explorer* because the benchmark uses ActiveX. Check it out at http://gamer.ubicom.com.

Ageia Postpones PhysX Launch

Physics accelerator maker claims it's "re-evaluating" the release date

Ageia says its hardware physics accelerator is running and ready to go. There's just one problem—the games aren't ready yet. No titles have shipped that would take advantage of the card's physics-calculating abilities, giving even the earliest of adopters little reason to purchase the card. Ageia representatives tell us the company is "re-evaluating its launch date." According to the representative, "It's not a lack of titles… it's timing. We are aligning our launch with the developers' product cycle." Which developers' product cycle is unclear, but it seems certain we won't be enjoying mind-blowing physics for at least another quarter, or two. Or three.



Dual-Core to Go from Intel

Mobile users will finally get to eat their dual-core cake when Intel introduces its new "Core Duo" CPU. The heavily revamped chip promises to be super-fast while sipping battery juice.

Code-named Yonah, the new CPU features a 151-million-transistor, single-die, dual-core processor. Although Intel would not confirm reports that it's ditching the "Pentium M" name, OEMs told *Maximum PC* the name "Core Duo" is a done-deal for the chip.

In many ways, the Core Duo is far more sophisticated than the new Pentium Extreme Edition 955 (see page 30). It features a pair of 2MB "smart" L2 caches that can be combined when one core is inactive. The separate cores also feature logic within the L1 cache to keep both cores fed with instructions and data. Intel said it increased the floating-point units in the chip to perform better during media-encoding tasks. The Core Duo also ups the front-side bus from 533MHz to 667MHz.

Amazingly, even though the new chip features two execution cores, Intel says—and OEMs have confirmed to us—that battery life is roughly the same as the previous Dothan single-core chip. Intel said it was able to do this by processing as much data as quickly as possible and then shutting off the cores to save power. The CPU also features logic that lets it flush the L2 cache to RAM, so that it can power down the L2 cache to save battery life.

FUNSIZENEWS

INTEL NAMES ITS TOP-SECRET CPUS

According to a list of super-secret double-background Intel CPU names published by the Tom's Hardware website (**www.tomshardware.com**), Intel is already naming its processors that are still three years out. The most interesting are Wolfdale and Ridgefield, which are dual-core, single-die processors with 3MB and 6MB of L2, respectively. There's also a CPU named Yorkfield—a desktop proc with eight cores and 12MB of cache. All of these processors are listed as 2008 parts, according to the secret roadmap.

CANNIBALISM IN VIDEO GAMES, FINALLY!

Just when you though the anti-PC-gaming crowd couldn't get any more ridiculous, a "family" group has released a study claiming that two new PC games are "all about cannibalism," according to an article about the study. The games in question? *Stubbs the Zombie* and *F.E.A.R.*, if you can believe that. The same study lists Far Cry as the number one game for parents to avoid, despite its lack of cannibalism.

NO MORE REBOOTS IN VISTA?

Microsoft claims its Vista operating system will be able to update itself without rebooting, or if it has to reboot, it will be able to return you to the desktop with all your previously open documents intact. Microsoft is calling the new feature the Restart Manager. Our take? We'll believe it when we see it—Windows XP was supposed to offer the same functionality.

MAKE BAR CODES, GO TO JAIL

A 19-year-old who printed custom bar codes, then slapped them on iPods so he could purchase them for $4.99 is facing three charges, including a felony count of forgery and two misdemeanors for theft.

Copyrighted material

THE FATE OF THE ENTIRE GALAXY IS IN YOUR HANDS. ARE YOU READY?

THE FLEETS
Do you quickly build a fleet of TIE fighters and swarm the enemy before they gain strength? Or take time and build a more powerful fleet of Star Destroyers?

THE WEAPON
Do you protect the Death Star and reveal it at a critical moment? Or do you break out your big gun first and use Rebel planets for target practice?

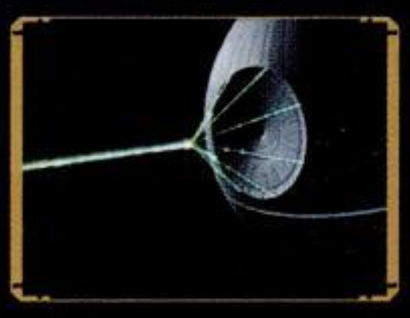
THE CREATURES
Do you attack head-on and risk massive casualties? Or flank the enemy, circle around and hope any rancors you meet along the way aren't hungry?

THE ELEMENTS
Do you wait until after the ice storm and lose the element of surprise? Or do you take advantage of low visibility and attack when they least expect it?

THE ARMIES
Do you crush bases under the feet of AT-ATs and risk losing a few? Or do you call down ships from space and bomb them back to the Stone Age?

STAR WARS
EMPIRE AT WAR

Will you repeat *Star Wars*® history or change it forever? Play ***Star Wars*: Empire at War** and test your strategic mettle in an epic fight to control the entire *Star Wars* galaxy. As the Ultimate Galactic Commander, jump right into battle without wasting time on tedious resource gathering. Lead the Rebel Alliance in a quest to overthrow the Empire. Or choose the dark side, and use Darth Vader and the Death Star to crush the Rebellion. Either way, every soldier, battalion and fleet are yours to control. Make *Star Wars* history. Get your copy today. **www.empireatwar.com**



TEEN
T
CONTENT RATED BY ESRB
Fantasy Violence

Game experience may change during online play.

LucasArts and the LucasArts logo are registered trademarks of Lucasfilm Ltd. © 2006 Lucasfilm Entertainment Company Ltd. or Lucasfilm Ltd. & ® or TM as indicated. All rights reserved. GameSpy and the "Powered by GameSpy" design are trademarks of GameSpy Industries, Inc. All rights reserved. Main image is a dramatized rendering. Not actual game play.

PC CD-ROM SOFTWARE

POWERED BY gamespy

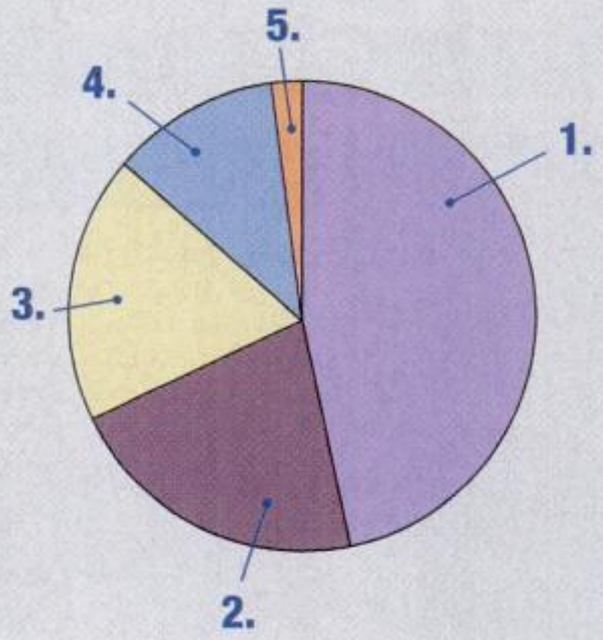
PETROGLYPH

LUCASARTS

Copyrighted material

Why Are We Upgrading Our PCs?

1. *Maximum PC told me to*
2. *Trying to get Battlefield 2 load times under 10 minutes per map*
3. *Overcompensating for other shortcomings*
4. *Components are my friends, and I want to have lots of friends*
5. *My wife/girlfriend forces me to*



Buzzword Alert: What is Web 2.0?

By utilizing new programming techniques and languages, developers can make web pages behave more like applications

Normally, we don't buy into fads and fancy buzzwords, but there might be something to this Web 2.0 hype. Web developers are creating web pages that behave more like applications running on your PC, rather than the static pages we're all accustomed to. Portions of a web page can be updated independently, without having to reload the entire page.

Such pages are created using the AJAX (asynchronous JavaScript and XML) technique. AJAX isn't a programming language, but rather several complementary technologies that enable more dynamic content in web pages.

Chances are you've already used a Web 2.0 app, and you didn't even know it. Hundreds of sites are using AJAX techniques to create cool, new web apps: everything from mail clients—Gmail (**www.gmail.com**) and Outlook Web Access—to photo sharing apps like Flickr (**www.flickr.com**). Plus, there are tons of new home-brew pages using Web 2.0 techniques—check out the custom-mapping app Wayfaring (**www.wayfaring.com**) and the custom radio site Last.FM (**www.last.fm**), as well as new sites from software behemoths, such as Microsoft's Windows Live initiative (**www.live.com**).

It's Easy Being Green

eBay helps you help the environment with its PC recycling initiative

You're right to think twice about tossing your outdated, unwanted electronics into the garbage — those things are chock-full of hazardous materials that have no business in our landfills (unless you find the prospect of mutant species appealing). That said, your closet isn't really the right place for old computer gear either, but luckily there's a responsible way to unload your electronics detritus.

eBay is taking the lead in electronics recycling with its Rethink Initiative. Launched last year, Rethink seeks to involve technology companies, government agencies, environmental groups, and eBay users in the fight against e-waste. As part of the ongoing effort, the Rethink home page (**http://rethink.ebay.com**) provides consumers and businesses with lots of useful information and links for donating, recycling, and otherwise disposing of computer electronics, including tools and resources that help you sell used goods on eBay.

GAME THEORY

THOMAS MCDONALD

Quake 4: Better than a Camera up the Ass!

During my first couple hours with *Quake 4*, I kept thinking, "Hey, this is pretty good!"—until I realized that what I actually meant was, "Hey, this is pretty good… compared to *Doom 3!*" Then again, the video of my colonoscopy was more entertaining than *Doom 3*. And better lit, too.

Quake 4 is a decent enough shooter, but this late in the franchise we have a right to expect a little more. Raven met the basic expectations: taking the rock-solid technology of *Doom 3* and turning it into something fairly straightforward. The problem revealed by *Quake 4* is exactly *how little* Raven needed to do to make us happy. Taking the *Doom 3* experience and eliminating the shoddy fun-house tricks, monster closets, obvious event triggers, tedious levels, and absurd darkness goes a long way to improving the experience. Raven takes us outside, gives us a few vehicles, and provides some good environments, and for a while we forget all about *Doom 3*.

Then the developers go and blow it. They stick us in dark corridors, start using monster pop-ups, and force us to use the most dreaded weapon in our arsenal: the flashlight. Thus, we're reminded that we're playing a sorta-*Doom 3* with a spackle-and-paint job, almost as though <SUCK> was hardwired into the code with no </SUCK> option.

Oh, they recover soon enough, and get back to the levels that have lights, but by that point I had stopped caring, and started noticing things like the way the monster AI seems to be based on two paradigms: "fire a crapload of ammo and charge" or "do the Electric Slide." It's hard enough to take the ridiculous-looking (and -sounding) Strogg seriously, and doubly so when they start doing fey little hops to the side to avoid fire.

Then there are the levels which, all too often, are just the same old twisty tunnels with triggered barricades. At least the levels avoid the rat-in-a-maze feel of *F.E.A.R.* and none of the creatures look like polyps, which is a small wonder considering the source.

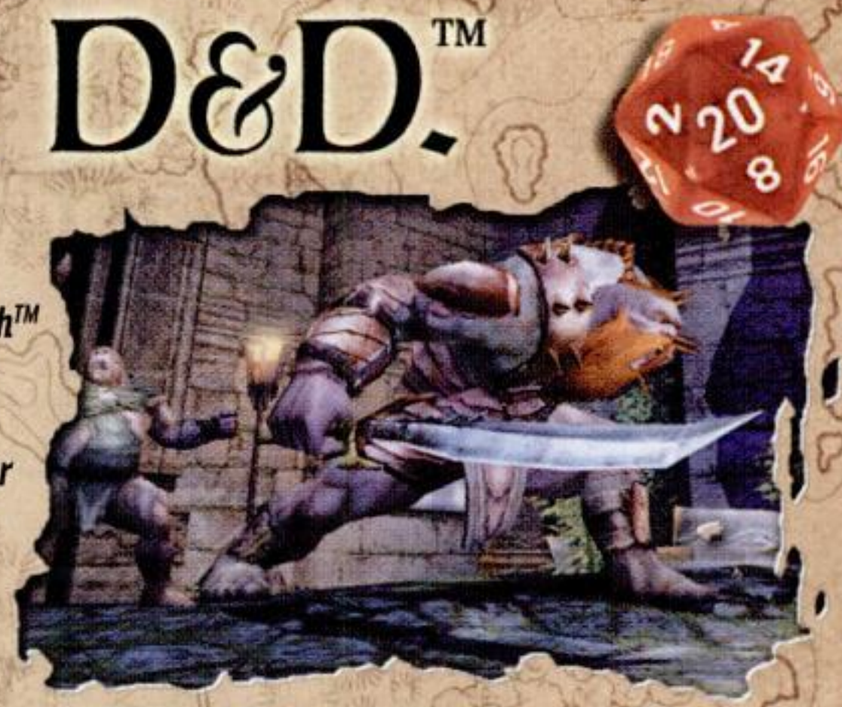
Tom McDonald has been covering games for countless magazines and newspapers for 11 years. He lives in the New Jersey Pine Barrens.

Copyrighted material

REAL COMBAT. REAL DANGER. REAL D&D.™

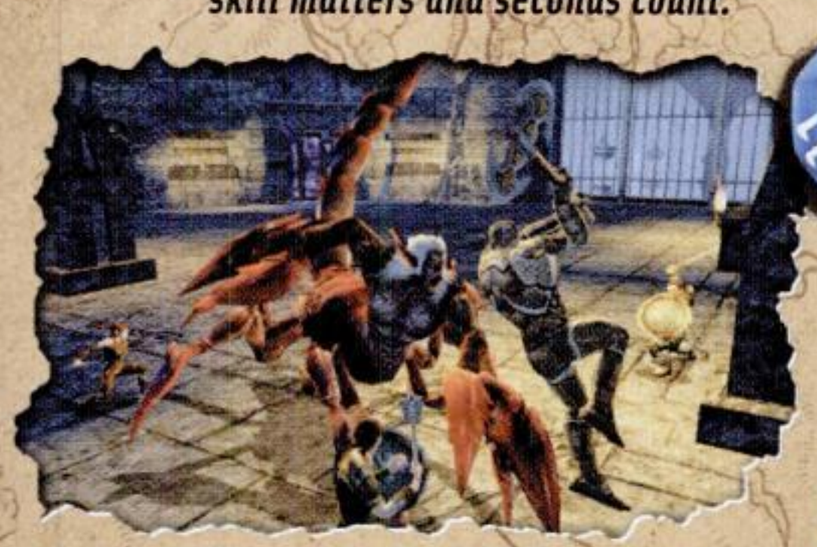
EBERRON

The time for dull level grinding and one-key combat is officially over. Dungeons & Dragons™ Online: Stormreach™ is the most dangerous and unique online game ever devised. Prepare for a radical gaming experience that puts you and your team in the middle of real-time combat within unforgiving private dungeons. Outwit, outfight and outsmart your foes - or die trying (a lot).



Real Combat: *Fight using Active Combat, where skill matters and seconds count.*

Real D&D: *Experience classic D&D v3.5 races, classes, monsters and rules.*



Real Danger: *Use your brawn, stealth and wits to survive unforgiving dungeons.*

PREORDER NOW
FREE BETA PASS INCLUDED!*
WWW.DDO.COM

DUNGEONS & DRAGONS ONLINE
STORMREACH™

RATING PENDING
RP
CONTENT RATED BY ESRB
Visit www.esrb.org for updated rating information.

turbine

ATARI

OFFICIAL Wizards of the Coast LICENSED PRODUCT

Licensed by Hasbro Properties Group

*Entitles holder to free admission into the Beta program for up to 10 days, subject to continuation of the program and network and server availability.

© 2005 Atari, Inc. All Rights Reserved. Dungeons & Dragons Online: Stormreach, Dungeons & Dragons Online, Eberron, Stormreach, Dungeons & Dragons, D&D and Wizards of the Coast and related logos are trademarks or registered trademarks of Wizards of the Coast Inc. in the U.S. and/or other jurisdictions, and are used with permission. Hasbro and its logo are trademarks or registered trademarks of Hasbro, Inc. in the U.S. and/or other jurisdictions, and are used with permission. Atari and the Atari logo are trademarks or registered trademarks of Atari, Inc. in the U.S. and/or other jurisdictions. Turbine and the Turbine logo are trademarks or registered trademarks of Turbine, Inc. in the U.S. and/or other jurisdictions. The ratings icon is a trademark of the Entertainment Software Association. All other trademarks are the property of their respective owners.

Copyrighted material

Air-Cooling **vs.** Water-Cooling

To true proponents of the *Maximum PC* lifestyle, there are few issues more important than keeping your powerful PC components cool, the cooler the better. More cooling allows more overclocking, a more stable system, and more geek cred. The most hardcore PC enthusiasts have always picked water-cooling over air-cooling, but with recent advancements on the air-cooling front even water-cooling fanatics are being tempted by the ease and simplicity of a simple heatsink/fan setup. Indeed, freedom from reservoirs, pumps, water blocks, and huge radiators is a seductive proposition to even the staunchest hydrophile.

On the other hand, water-cooling is enjoying its own resurgence in popularity, thanks to inexpensive kits that can be bolted onto any ATX case in just over an hour. A lot of folks who would never have dreamed of dipping their toes in the water, so to speak, are now considering doing just that. Both cooling techniques have their pros and cons, making the two competing technologies a perfect subject for comparative evaluation.

BY JOSH **NOREM**

round 1 EASE OF INSTALLATION:

Anyone who has installed a water-cooling kit will look at the title of this category and let loose a hearty guffaw. Air-cooling takes a "no contest" victory. Though difficulty varies on a kit-by-kit basis, most water-cooling kits require removing the motherboard, routing tubing to the blocks from the pump, and finding space inside the case for a reservoir and a radiator. This stands in stark contrast to the typical heatsink/fan (HSF), which simply bolts onto the processor in a matter of seconds. Sure, some HSFs are so hefty they require a CPU backplate for extra support, which entails the removal of the mobo, but the majority of HSFs just bolt on without the need for tools or time-intensive labor. **WINNER: AIR-COOLING**

AIR-COOLING:
Zalman CNPS9500 LED, $80,
www.zalmanusa.com

round 2

COOLING PERFORMANCE: Water is extremely effective at absorbing and holding heat, much more so than air. It takes a much greater amount of energy to warm a cubic foot of water than it does to warm a cubic foot of air. That's the reason a water-cooling kit transfers heat from your CPU to the outside of your case better than an air-cooled solution. There are some HSFs that can equal a water-cooling kit's performance, but not many. A typical water-cooled CPU will see a 10-13 C rise in temperature under load, while an air-cooled setup runs 20-25 C hotter under load. **WINNER: WATER-COOLING**

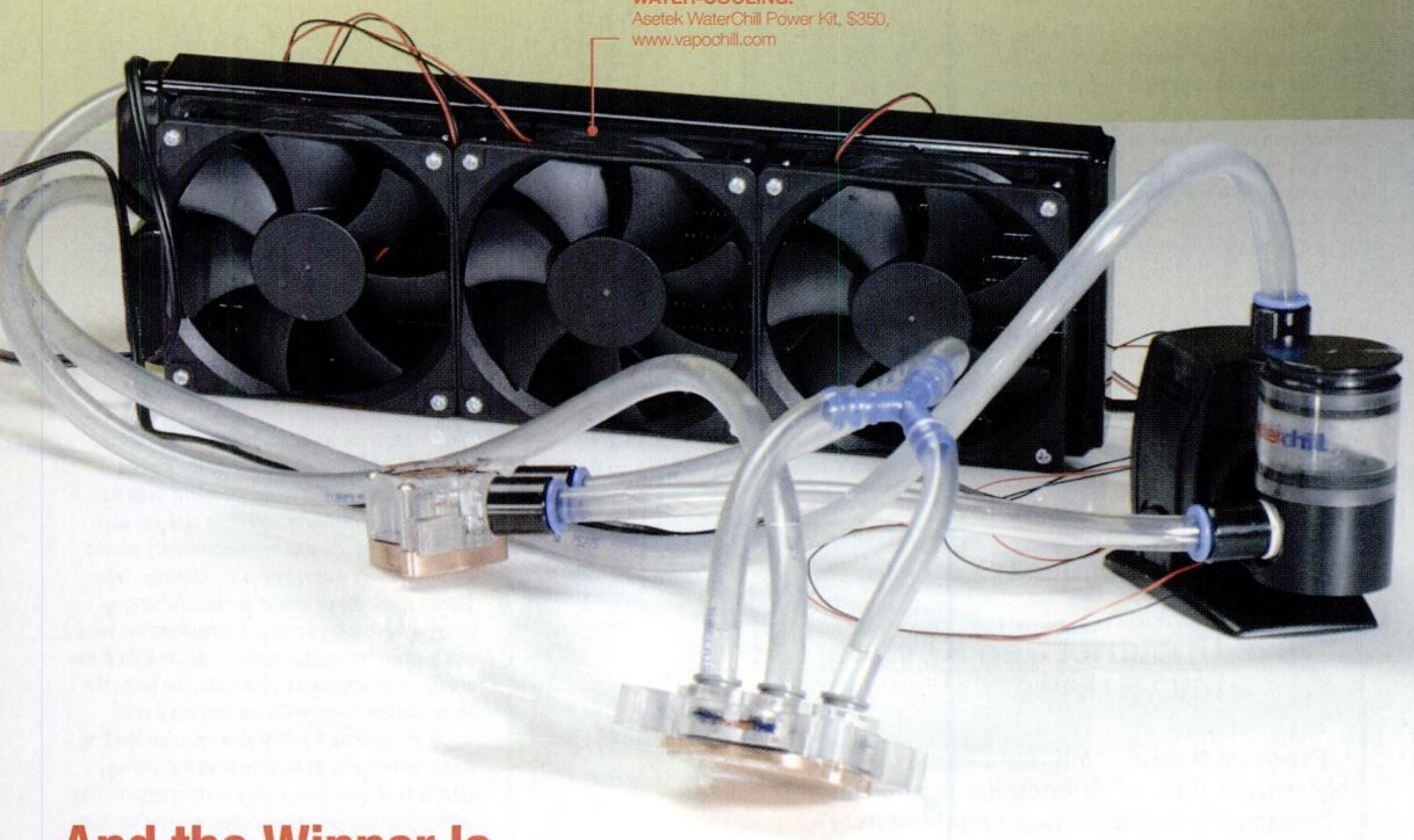
round 3

NOISE OUTPUT: For folks who want a dead-silent PC, water-cooling is the only way to go. Fans are used in both water- and air-cooling setups, to radiate heat out of the heat exchanger (radiator or heatsink), but you usually only need a large, slow-spinning fan to cool your water-cooled rig's radiator. An air-cooled heatsink typically requires a high-speed, and therefore noisy, fan to achieve the same performance. This isn't always the case, obviously; there are some exceedingly quiet HSFs on the market, but water-cooling kits are generally the quieter solution. In fact, there are several totally fanless (and totally silent) water-cooling kits now available, making it that much easier to declare a winner. **WINNER: WATER-COOLING**

Copyrighted material

round 4 **OVERCLOCKING:** Once again, this is a slam dunk for water-cooling. Overclocking a processor by increasing its multiplier and front-side bus speed makes it run hotter than normal. When you increase the core voltage, the proc gets even more toasty. The more heat your cooling solution can remove from your system, the more you'll be able to overclock the CPU. Because water-cooling provides better overall cooling performance, it's always given us better overclocking results than air-cooled setups. As an example, we were able to get a Pentium 4 3.6GHz Prescott core up to 4.25GHz using water-cooling, but we were only able to get the same processor up to 4.0GHz with an aftermarket HSF. **WINNER: WATER-COOLING**

round 5 **VALUE:** Water-cooling is bitchin', but it's expensive. The cheapest kit we've reviewed costs a tad more than $100, while you can buy a kick-ass air-cooling setup that's quiet and performs quite well for just $35. Heck, even the most expensive heatsink on the market—Zalman's CNPS9500—costs just $80, still less than the *cheapest* water-cooling kit. Though water-cooling makes for silent running and awesome performance, it's not within everyone's budget. So if you're looking for the most cooling performance for your buck, air-cooling is the answer. **WINNER: AIR-COOLING**



WATER-COOLING:
Asetek WaterChill Power Kit, $350,
www.vapochill.com

And the Winner Is...

If you've been tallying up the winner categories, it should come as no surprise that water-cooling takes the cake in this cooling-tech deathmatch. While we appreciate the simple installation and comparatively low price tag afforded by the most cutting-edge air-coolers, the majority of HSFs available today can't hold a candle to water-cooling.

Of course, there are some awesome heatsinks that are exceptions to this rule. In the last few months we've lavished high praise and Kick Ass awards upon several HSF configs that have blown us away, including the Zalman CNPS9500, the Arctic Cooling Freezer 64 Pro, the Vapochill Micro, and the Cooler Master Hyper 6+. But these coolers are the cream of an extremely large crop.

And while air-cooling will get the job done for most people, there are two scenarios in which water-cooling is absolutely *necessary*: silent operation and CPU overclocking. In these two instances water-cooling delivers performance that HSF setups can only dream about. Sure, water-cooling is extravagant, but in every measure of performance that matters, it's the superior way to cool a PC. MPC

Copyrighted material

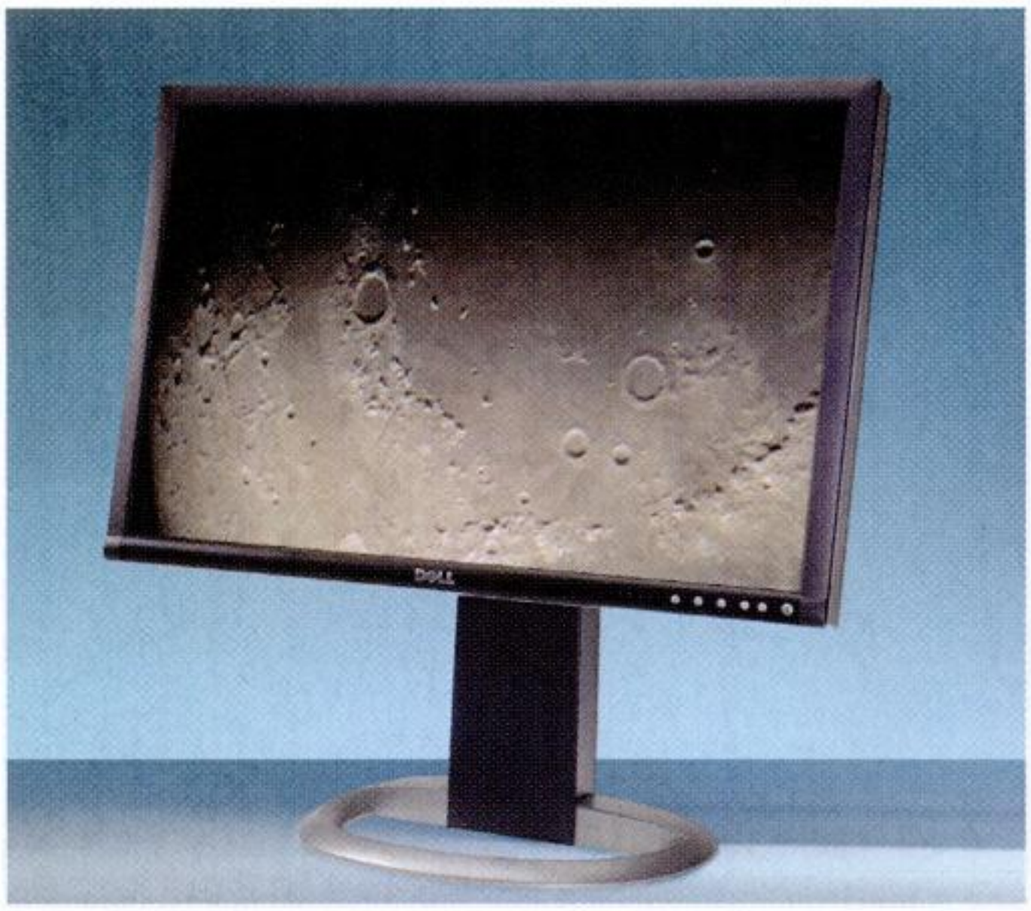
Max, ***Watchdog of the month***

Our consumer advocate investigates...

✓Whining Monitors ✓Keyloggers ✓Yamakawa ✓FlipStart ✓Counterfeiters

DELL 2405FPW SQUEALS LIKE A PIG?

Maximum PC **loves the Dell 2405FPW monitor so much it used two of those bad boys in its 2005 Dream Machine. Now, however, the Dog has heard from a handful of readers who report a high-pitched whine or squeal coming from their monitors. When contacted by the Dog, Dell officials said the problem is isolated and any consumers who contact the company can have their monitors repaired. Because the magazine is recommending the monitor, the Dog wants to know just how isolated the problem is, and if Dell is addressing the issue promptly. If you continue to have problems with your 2405FPW, contact the Dog at watchdog@maximumpc.com.**



If you can't get Dell to fix the whine of your 2405FPW, the Dog wants to know.

LOGGING MY PHOTOS

I have been a long-time user of Photodex's ***CompuPic*** *standard, so I recently purchased* ***CompuPic Pro*** *for my new laptop. After installing it,* ***Spyware Doctor*** *keeps detecting* ***CompuPic Pro*** *as a keylogger.*

To solve my problem, ***CompuPic*** *is telling me to uninstall and then reinstall the program with all of the antivirus programs disabled. I don't want to allow a keylogger to be installed by turning off my antivirus. So, does this software have a keylogger? Can you tell me what's up with it?*

—Darrell Sensing

The Dog downloaded a trial version of *CompuPic* and installed it on a clean install of Windows XP Pro with *Snoop Free* installed. *Snoop Free* freeware application (www.snoopfree.com) monitors your OS and alerts you if any program installs with the capability to take screenshots or hook into keyboard DLLs. Upon installing *CompuPic, Snoop Free* alerted the Dog that the program could potentially be a keystroke logger because it needs access to the keyboard DLLs. The key word is *could.* Programs such as *Snoop Free, Zone Alarm,* and other anti-spy apps often flag programs that need momentary access to the keyboard during install or execution. This doesn't mean the programs are bad. As long as you're downloading the app directly from the vendor or a trustworthy source, you're probably safe. If you download an app from a pirate site, you really don't know what ne'er-do-wells are hitching a ride.

A spokesman for Photodex assured the Dog that the company does not use or include any kind of keylogging capability in its program. The spokesman said the false positive could be from the CD-burning capabilities of the program or its Internet connectivity. Photodex isn't some upstart operating in a basement; the company has been selling imaging software since 1987.

SnoopFree Privacy Shield
Unauthorized Keyboard Hook
EXTREME PRIVACY RISK -- Use Extreme Caution
Program Name: "compupic.exe"
Program Path : "C:\Documents and Settings\No 2\Local Settings\Temp\mvu1.tmp\compupic.exe"
The program named above is trying to hook your keyboard. If you allow this, the program will be able to watch every key you press. If you want to allow this program to watch every key you press, you should click the 'Allow Access' button below.
Allow Access
Deny Access
More Information

Anti-spyware programs such as *Snoop Free* might flag legitimate programs.

YAMAKAWA REBATE REDIRECT

I wanted to let you and other readers know that Yamakawa, makers of internal, external, and stand-alone DVD decks, is no more. Back in August, the company had rebates going on many products, notably $50 for the DVR-Y08 unit I purchased. The rebate company gave me a tracking number and a website to follow its

Copyrighted material

newegg.com®

ONCE YOU KNOW, YOU NEWEGG.

- 98% of orders ship within 1 business day
- 260,000 product reviews from customers
- 19,000 customer testimonials
- "A" rating on ANY merchant ranking site

COMPUTER SHOPPER SHOPPERS' CHOICE

GOLD HONOREE BizRate 2005

Visit Newegg.com for today's prices, complete product list, and in-depth product info.

AMD

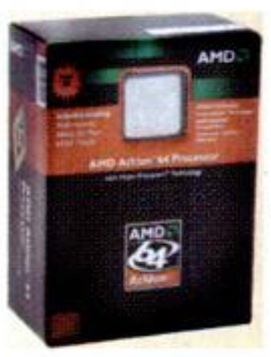
AMD Sempron™ 64 3400+
Palermo 800MHz FSB
256KB L2 Cache
Socket 754 Processor

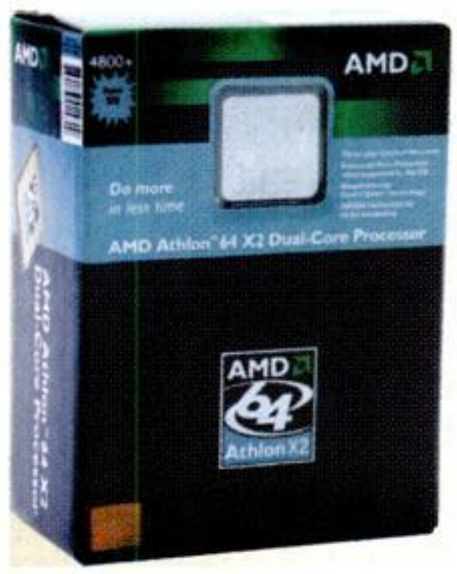
$150.00

AMD

AMD Athlon™ 64 4000+
San Diego 1GHz FSB
1MB L2 Cache
Socket 939 Processor

$370.00





AMD

AMD Athlon 64 X2 4800+ Toledo
1GHz FSB
2 x 1MB L2 Cache
Socket 939 Dual Core Processor

Increase your performance by up to 80% with the AMD Athlon™ 64 X2 dual core processor.

$850.00

THE REASON PEOPLE LOVE THEIR COMPUTERS SUMMED UP IN SMALL SILICON SQUARES.

Power Supply

$135.99
[1]10.00 Mail-In-Rebate

SeaSonic S12-500 ATX12V 500W
Power Supply 100 - 240V

Memory

$245.00
[1]25.00 Mail-In-Rebate

Patriot 2GB (2 x 1GB) 184-Pin
DDR SDRAM 400 (PC 3200)

Software

$89.99

Roxio Easy Media Creator 8
Complete Backup and Burn Solution

Cooling Device

$65.99

Zalman CNPS9500 LED 92mm
Blue LED Light Cooling Fan/Heatsink

Keyboard

$69.95

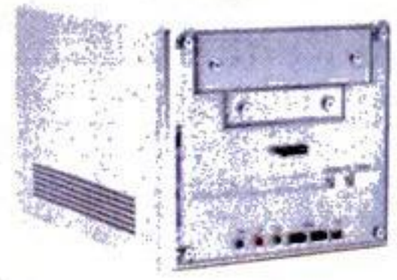
Logitech G15 2-Tone 104 Key
USB Gaming Keyboard with LED

Wireless Adapter

$22.98

TRENDnet TEW-424UB USB 2.0
802.11b/g Wireless Adapter 54Mbps

Barebone System



$203.99

Shuttle SK21-G1-SV-V1 AMD
Socket 754 Sempron Processor

Video Card

$314.99

BFG Tech BFGR78256GTOC
NVIDIA Geforce 256MB DDR3 PCI

Enter Promo Code MAX20206 at checkout for **FREE SHIPPING** on these items

©2006 Newegg Computers. All rights reserved. **Pricing and Availability:** Prices good from 12/31/05 to 3/01/06 or while supplies last. Prices, availability and terms of offers may change without notice. Taxes and shipping charges, if applicable, are not shown. Newegg is not responsible for pricing or other errors and reserves the right to cancel orders arising from such errors. All items sold as retail unless otherwise noted. OEM products may be sold without packaging, documentation or other articles.

NO PAYMENTS FOR 6 MONTHS
WITH YOUR *NEWEGG.COM PREFERRED ACCOUNT*®
See Newegg.com for details. Promotion expires 03/31/06

Copyrighted material

Yamakawa appears to be down for the count, but one reader says rebates for its optical drives might still be available.

progress. After doing this for a month and seeing no progress, I did a little sleuthing and found a forum that printed a phone number people should call for rebates. That number is 805-685-1827. You should have your tracking and model number ready. I was again told to wait four weeks. Hopefully it will come through. I just thought I would pass the number along to other ***Maximum PC*** *readers who are waiting for rebates from Yamakawa products.*

— Lee

Thanks for the update, Lee. Arf.

FLIPSTART OR FLIPSTOP?

I've been intrigued ever since I first heard about Paul Allen's FlipStart pocket PC from Vulcan. You can still see it at ***www.flipstartpc.com****. The problem is that a lot of time has gone by since I first heard about this product, and so far no FlipStart graces my humble abode.*

Some have reported that this product will never see the light of day, and that it's just vaporware, something that might be cool to talk about but will never really be available to the buying masses. Can you cut through the red tape and find out, once and for all, if Mr. Allen will, in fact, be releasing said product, along with an approximate time frame and perhaps an idea of the price, for us curious would-be purchasers? Can the Watchdog simply ring Mr. Allen and get some facts directly from The Man and share his response with your readers? That would certainly set the record straight!

— Steve Lauver

Unfortunately, the Dog does not have direct access to Paul Allen and his bodyguards prevent any chance of personally grilling The Man about the Vulcan FlipStart. The Dog understands your concerns and shares them. FlipStart seems to have gone to silent running around the end of 2004. Normally, that means a product is destined for failure. Still, the Dog has to point out, many people were highly skeptical of OQO's handtop PC, but the company is now on its second PC iteration and has been shipping units since October of 2004. Although OQO officials have told us the product is selling "great," Vulcan must be carefully monitoring OQO's success. The entire category of $2,000 handtop PCs, or micro PCs, is still unproven. So is FlipStart a flopstart? The Dog quizzed company officials, who denied reports the company is a goner and said that more news would soon be made available on the FlipStart soon.

COUNTERFEIT CRUZER

I want to alert readers about some counterfeit products on the market. I recently purchased five 256MB SanDisk Cruzer Mini USB flash disks online. When I got them, I found out that all five were counterfeit. One of them stopped working altogether, and another worked only intermittently (I didn't even try the last two). I did an exchange from PC Mall—they took care of the problem immediately, no questions asked, so I don't have a bone to pick with them. I do, however, think other readers should know about the potential for receiving a counterfeit Cruzer Mini. Here is how I detected the counterfeit:

1) If you cruise into Disk Management, you will notice that it falsely reports the Cruzer as having a 1TB capacity (it shows 1028GB total, 250MB allocated). Now, as much as I wish SanDisk found out how to cram 1TB onto a solid-state device the size of my thumb, and sell it for $30, I figured this wasn't likely.

2) There is no software preinstalled on the device (the Cruzer usually comes with ***CruzerLock*** *preinstalled, according to the support website).*

3) All five devices had the same serial number, and when I contacted SanDisk, they had no record of the serial number (the SN on my five disks was: AR0505HQB)

Fortunately, I was able to resolve the issue and return the counterfeit devices. I hope this will help other readers detect/discover illegitimate product!

—Mark Finzel

The Dog confirmed with SanDisk that there are indeed reports of counterfeit Cruzers on the market, but SanDisk told the Dog the cases are limited. Reps said the company is working with law enforcement officials to determine the source of the counterfeits and is advising consumers to stick with reputable stores for purchases of all hardware.

Hardware "counterfeiting" and remarking isn't really new. The latter involves remarking low-quality or rejected mice, motherboards, RAM, and CPUs and selling them for higher prices. One firm in China was recently slammed for openly selling 1.7GHz Celeron CPU/motherboard combos as 3.6GHz Pentium 4 CPUs—a difference of about $330. A salesman for the company, Shenzhen Chuanghui Electronics, even told IT weekly paper *Computerworld* that it includes software with the Celeron/mobo combo that masks the Celeron as a Pentium 4 in the BIOS and in Windows XP. The salesman defended the company's product to *Computerworld*, and said it doesn't hide the facts from its customers, but admitted that the company has no control over what its customers do with the final product.

Intel actually makes a utility to detect when a CPU has been overclocked—a common sign of remarking—and can tell you what family the chip is actually in. To download it, visit http://support.intel.com/support/processors/tools/frequencyid/.

There are a few ways to guard against buying a counterfeit part. First, is the price too good to be true? Counterfeit pushers usually want to unload the products as fast as possible, so they offer them at fire sale prices. Second, look for signs of tampering, poor print quality or misspelled words such as "ScanDisk" instead of SanDisk. Third, shop at stores you know to be reputable and that have robust return policies. MPC

SanDisk has confirmed that some counterfeit USB thumb drives are out there.

Got a bone to pick with a vendor? Been spiked by a fly-by-night operation? Sic The Dog on them by writing **watchdog@maxumumpc.com.** The Dog promises to answer as many letters as possible, but only has four paws to work with.

Copyrighted material

THE BIG HOSTIN

Compare 1&1 with other companies and you'll see that not all web hosts are created equal. You want **the most web for your money,** so you need a web hosting specialist. 1&1 focuses all its resources on bringing you the most complete hosting packages at some of the best prices in the industry.

It's official: the gloves are off! With **4 million customers** and more than a decade of web hosting experience, 1&1 stands head-to-head with all the industry heavyweights. **Compare for yourself and see why 1&1 is the world's #1 web host.**

HERE'S WHY 1&1 IS THE CLEAR WINNER IN WEB HOSTING:

- ☑ Named 2004 Hosting Growth Leader by Netcraft
- ☑ Over 15 years of industry experience
- ☑ Unsurpassed connectivity
- ☑ World's largest web host according to Netcraft
- ☑ Innovative web applications
- ☑ One-stop shop for all your website needs
- ☑ More than 5 million domains and 4 million customers worldwide
- ☑ 200 in-house programmers
- ☑ 24/7 toll-free phone & e-mail support

Netcraft Ltd – www.netcraft.com

Member of united internet

1.877.GO1AND1

Copyrighted material

G SHOWDOWN

1&1 – THE BEST HOSTING PACKAGES

FREE DOMAINS INCLUDED

ALL-INCLUSIVE HOSTING 1&1 BEST VALUE GUARANTEE COMPARE FOR YOURSELF

	1&1 HOME	YAHOO! STARTER	Go Daddy DELUXE
Price per month	$4.99	$11.95	$9.95
Included Domains	2	1	0
Web Space	10,000 MB	5,000 MB	10,000 MB
Monthly Transfer Volume	500 GB	200 GB	500 GB
E-mail Accounts	1,000 IMAP or POP3	200 POP3	1,000 POP3
Mailbox Size	2,000 MB	2,000 MB	10 MB
Website Builder	12 pages	✓	—
Photo Gallery	✓	✓	✓
Dynamic Web Content	✓	✓	—
Web Statistics	✓	✓	✓
Chat Channels	✓	—	✓
Database	25 MySQL (Linux)	MySQL support	25 MySQL (Linux)
Search Engine Tools	✓	Extra charge applies	Extra charge applies
PHP Support (Linux)	✓	✓	✓
Perl Support (Linux)	✓	✓	✓
Software suite ($600 value)	✓	—	—
90-day Money Back Guarantee	✓	—	—
Support	24/7 Toll-free Phone, E-mail	24/7 Toll-free Phone, E-mail	24/7 Phone, E-mail

Plus $1.99 per year with non-domain purchase from Go Daddy

You'll pay from $29.95 per year additional with Go Daddy

VALUE 1&1 delivers the best value for your money!

© 2005 1&1 Internet Inc. All rights reserved. Prices based on a comparison of regular prices effective 12/01/2005. Product and program specifications, availability, and pricing subject to change without notice. Visit 1and1.com for details. Go Daddy is a registered trademark of Go Daddy Software, Inc.; Yahoo! is a registered trademark of Yahoo! Inc.

1&1

FOR MORE DETAILS VISIT 1AND1.COM

Copyrighted material

SQUASH *all* YOUR PC BUGS

Your computer is vulnerable to a whole host of viruses, spyware, Trojans, and other unpleasant programs. We'll show you how to purge Internet nasties from your computer, and then keep them out once and for all!

BY CHRISTOPHER NULL

As you read these words, your PC is under attack. Whoops, there's another invader. And another.

Computer insecurity statistics today are truly frightening. One study says 80 percent of users have some form of spyware on their system. Roughly 3,200 viruses are currently "in the wild" and active. According to some experiments, a Windows XP Service Pack 1 computer can be compromised and turned into a zombie within four minutes of being plugged into a standard broadband connection.

Those are grim figures, but you're not helpless in this fight. Today's security tools are more sophisticated than ever. Combine them with some old-fashioned good judgment and you'll be protected in no time.

But what if you do get infected, despite your best efforts? We've got you covered there, too. Neither virus scanners nor spyware killers are 100 percent effective, and it takes a little specialized know-how to cure what ails you.

This guide will show you, step by step, how to become the security expert that every *Maximum PC* reader ought to be. Here's how to configure your firewall, from basic setup to custom rule creation; how to set up your antivirus software and remove any lingering infections; and what tools to turn to when spyware finally hunts you down.

We've capped it all off with a little "best practices" discussion, a guide to common sense computing that we've never put into one article but should have years ago.

Copyrighted material

ILLUSTRATION BY OLIVER WOLFSON

CONFIGURE YOUR FIREWALL LIKE AN EXPERT

A good firewall is always the first line of defense against attack. And trust us, you have to have one if you're connected to the Internet by any method, be it wireless, broadband, or rinky-dink modem.

While many security threats can be prevented with good behavior and common sense, such tactics won't ward off TCP/IP-based attacks. That's because, like it or not, every IP address is bombarded, constantly, with automated attacks hoping to turn your computer into a zombified mess. Hordes of infected computers (possibly numbering in the millions) do nothing but send out probes and active attacks to random IP addresses, day and night. At their most harmless, these are simple denial-of-service (DOS) attacks designed to crash your machine or slow down your Internet connection. At their worst, these probes find unprotected PCs on which to automatically install spyware and other malware, turning them into a major security risk and another member of the online zombie army!

And yet many users dread the firewall, with its acronym-filled configuration screen and documentation seemingly geared toward experts. Fear not the firewall, dear reader. The firewall is your friend, and we're here to show you how you can have an expert rig deployed in mere minutes.

FIREWALL OPTIONS

The good news is that you probably already have a firewall up and running, even if you don't know it. You'll find a firewall in one or more of these locations:

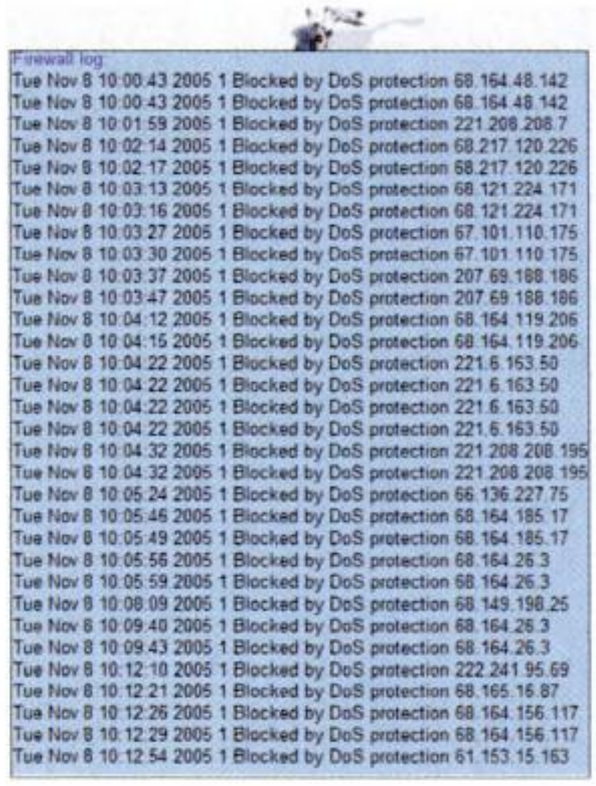
►**YOUR ROUTER.** If you have any kind of networking equipment installed, it's probably a router, and it almost certainly has a firewall inside it, turned on by default. Note that your cable or DSL modem is *not* a router and does not have any security firmware. As well, a simple hub, switch, or wireless access point will not contain security code.

►**ANY WINDOWS XP SERVICE PACK 2 COMPUTER.** The Windows firewall is on by default, but only if you're patched to SP2. Configurability is limited, though, and power users will want to consider another option like:

►**THIRD-PARTY FIREWALLS.** If you don't have a router-based firewall, definitely consider investing in a firewall such as Zone Labs *ZoneAlarm Pro* (**www.zonelabs.com**), which you'll find far more powerful than the vanilla XP firewall.

BASIC CONFIGURATION

No matter what type of firewall you choose, all are painless to set up initially. Unlike the complicated firewalls of yore, modern 'walls are preconfigured with the most common set of "rules" already in place. A rule specifically allows or denies traffic on a certain TCP or UDP port. Firewall coders know that you're going to want TCP ports 80, 25, and 20 open, because you probably want access to the web, email, and FTP services. But what about port 1375, used by Bytex enterprise equipment? Probably not. It's blocked by default.


Firewall log
Tue Nov 8 10:00:43 2005 1 Blocked by DoS protection 68.164.48.142
Tue Nov 8 10:00:43 2005 1 Blocked by DoS protection 68.164.48.142
Tue Nov 8 10:01:59 2005 1 Blocked by DoS protection 221.208.208.7
Tue Nov 8 10:02:14 2005 1 Blocked by DoS protection 68.217.120.226
Tue Nov 8 10:02:17 2005 1 Blocked by DoS protection 68.217.120.226
Tue Nov 8 10:03:13 2005 1 Blocked by DoS protection 68.121.224.171
Tue Nov 8 10:03:16 2005 1 Blocked by DoS protection 68.121.224.171
Tue Nov 8 10:03:27 2005 1 Blocked by DoS protection 67.101.110.175
Tue Nov 8 10:03:30 2005 1 Blocked by DoS protection 67.101.110.175
Tue Nov 8 10:03:37 2005 1 Blocked by DoS protection 207.69.188.186
Tue Nov 8 10:03:47 2005 1 Blocked by DoS protection 207.69.188.186
Tue Nov 8 10:04:12 2005 1 Blocked by DoS protection 68.164.119.206
Tue Nov 8 10:04:15 2005 1 Blocked by DoS protection 68.164.119.206
Tue Nov 8 10:04:22 2005 1 Blocked by DoS protection 221.6.163.50
Tue Nov 8 10:04:22 2005 1 Blocked by DoS protection 221.6.163.50
Tue Nov 8 10:04:22 2005 1 Blocked by DoS protection 221.6.163.50
Tue Nov 8 10:04:22 2005 1 Blocked by DoS protection 221.6.163.50
Tue Nov 8 10:04:32 2005 1 Blocked by DoS protection 221.208.208.195
Tue Nov 8 10:04:32 2005 1 Blocked by DoS protection 221.208.208.195
Tue Nov 8 10:05:24 2005 1 Blocked by DoS protection 66.136.227.75
Tue Nov 8 10:05:46 2005 1 Blocked by DoS protection 68.164.185.17
Tue Nov 8 10:05:49 2005 1 Blocked by DoS protection 68.164.185.17
Tue Nov 8 10:05:56 2005 1 Blocked by DoS protection 68.164.26.3
Tue Nov 8 10:05:59 2005 1 Blocked by DoS protection 68.164.26.3
Tue Nov 8 10:08:09 2005 1 Blocked by DoS protection 68.149.198.25
Tue Nov 8 10:09:40 2005 1 Blocked by DoS protection 68.164.26.3
Tue Nov 8 10:09:43 2005 1 Blocked by DoS protection 68.164.26.3
Tue Nov 8 10:12:10 2005 1 Blocked by DoS protection 222.241.95.69
Tue Nov 8 10:12:21 2005 1 Blocked by DoS protection 68.165.15.87
Tue Nov 8 10:12:26 2005 1 Blocked by DoS protection 68.164.156.117
Tue Nov 8 10:12:29 2005 1 Blocked by DoS protection 68.164.156.117
Tue Nov 8 10:12:54 2005 1 Blocked by DoS protection 61.153.15.163

A firewall log fil shows 32 malicious attackts in the space of 12 minutes.

Installing a router or Windows firewall is literally as simple as turning it on. But setting up a tool like *ZoneAlarm* (our favorite firewall) requires a little more attention.

When you first install *ZoneAlarm*, you'll be asked whether you want to use its SmartDefense Advisor, which examines incoming and outgoing traffic and decides whether it's malicious. *ZoneAlarm* can't possibly know what network games you want to play or what P2P apps you prefer, so set it to Manual, which gives you control over what is blocked.

After installation, you'll suddenly receive a number of alerts about your PC, including some marked as "dangerous behavior."

IS IT REALLY DANGEROUS?

Security applications can be overzealous in their opinion of what constitutes a threat, so before you start blocking all inbound and outbound traffic, do a reality check. If you receive a message like the one on the right, Google the specific application (spoolsv.exe, in this case) and see what comes up. Doing so, we found that this application is the Windows spooler service, probably the result of a networked printer being installed on the machine. If you're extra paranoid, you can check the IP address noted in the alert by typing it in at **http://ws.arin.net/whois**. In this case, the IP resolves to a legitimate ISP and doesn't really give us any additional information about it.

But malware authors are crafty: spoolsv.exe is used as the name of at least three different viruses, and if you find the executable outside the \Windows\System32 folder it probably is malicious. Likewise, if spoolsv.exe is consuming CPU cycles, it should probably be blocked and/or removed.

Also be on the lookout for hard-to-spot tricks: lsass.exe (with a lowercase L) is a Windows security application, while lsass.exe (with an uppercase I) is a serious virus called Optix.Pro. In the default Windows font, they look identical. Security apps would definitely spot Optix.Pro, but if you type an L instead of an I while doing research, you might be tempted to give it the OK. (Don't.)

Because there are tens of thousands of possible cases like this, it's impossible to make blanket rules about what's malicious and what's benign. The bottom line: Use your best judgment, and when in doubt, block it out.

ZoneAlarm Security Alert
NEW PROGRAM
Spooler SubSystem App is trying to access the Internet.
Identification: Identified
Application: spoolsv.exe
Destination IP: 38.113.220.17:DNS
View Properties
More Information Available:
This is the program's first attempt to access the Internet.
SmartDefense Advisor
More Info...
Recommendation: Select Remember this setting and click Allow.

Is spoolsv.exe malicious? Only Bill Gates knows for sure.

Copyrighted material

Don't panic. This is part of the configuration process, and many processes check the net frequently, such as Windows Update and anti-virus tools. (See "Is It REALLY Dangerous?" on the previous page to learn how to tell whether an alert is worth worrying about.) Bottom line: If you're upgrading from the Windows firewall or adding to your router's security (yes, two firewalls are better than one), these are probably not genuine risks.

Additional alerts will pop up from time to time. Again, treat them on a case-by-case basis.

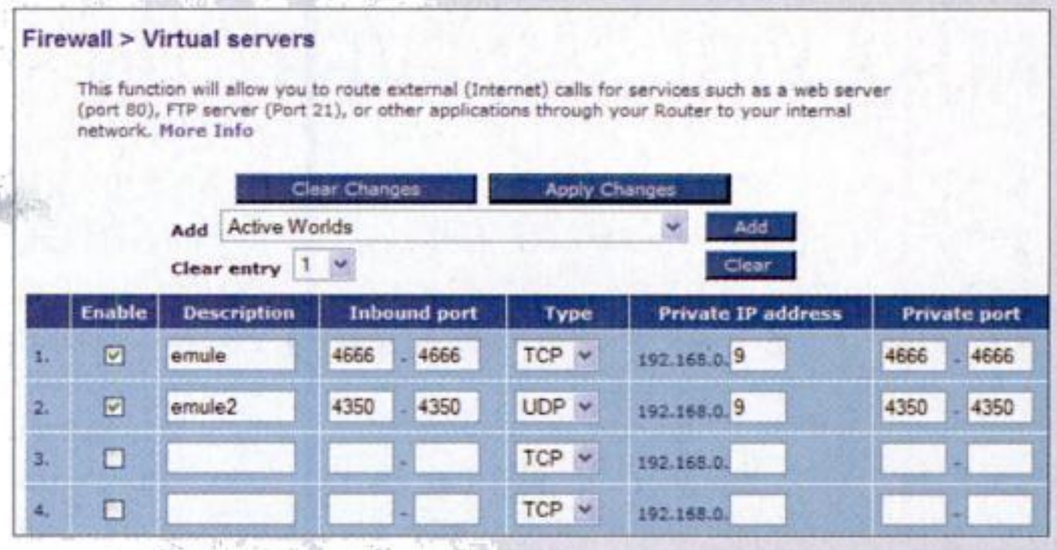
OPENING PORTS

Now that your firewall is installed, you might want to add network-enabled applications—that is, apps that can accept unsolicited traffic from the Internet. These apps are usually servers of some sort, either web-, FTP-, or game-related. With ZoneAlarm or the Windows Firewall, just launch the application. An alert will pop up, warning you that a new app is trying to access the Internet, giving you the option to allow or deny the connection. Allow it, and the firewall will reconfigure itself. (Note that this pop-up is usually underneath a game screen, so if you are having trouble, quit the app, allow the connection, and restart the game.)

With a router, it gets trickier, because these devices can't ask you whether the traffic is good or bad. This means you need to configure the router manually by opening the appropriate ports and pointing them to the computer on which the server software is running on.

First, find out what port numbers you need open by checking the software settings, help files, or online documentation. Next, give your machine a static IP address on your network (through the Network Connections control panel in Windows). You should use an unused address in the range your router doles out, usually 192.168.0.x, where x is a number between 2 and 255. Make a note of the IP address you use.

Armed with this information, configure open ports as needed. This process varies by router; check for tabs named Virtual Server, Firewall, or Port Redirection. Once located, simply enter the port numbers, the protocols used (UDP for games and TCP for data traffic), and the static IP address of the PC. All done!


Firewall > Virtual servers
This function will allow you to route external (Internet) calls for services such as a web server (port 80), FTP server (Port 21), or other applications through your Router to your internal network. More Info
Clear Changes
Apply Changes
Add
Active Worlds
Add
Clear entry
1
Clear
Enable
Description
Inbound port
Type
Private IP address
Private port
1. emule 4666 - 4666 TCP 192.168.0. 9 4666 - 4666
2. emule2 4350 - 4350 UDP 192.168.0. 9 4350 - 4350
3. TCP 192.168.0.
4. TCP 192.168.0.

When setting up a custom port, use the same TCP and UDP numbers for the inbound and private ports.

KEY POINTS

DO use some kind of firewall, even if it's just the version built into Windows.

DON'T automatically assume that all network traffic is dangerous.

DO use multiple firewalls if you're concerned about net attacks.

DO configure custom ports for your networked applications and games.

DON'T mess with the DMZ, even though it sounds cool: It's for hardened servers only.

TEACH A MAN TO AVOID PHISH

As the latest scam to target unsuspecting computer users, phishing has become the lazy hacker's way to separate you from your eBay and PayPal passwords, your credit card numbers, your bank logins, and anything else where digital bucks are at stake. The game is simple: Forge an email that looks like it's from the real PayPal, but redirect any clicks to a spoof site. Once you type in your password, the crooks are quick to jump into your account and drain it of funds, often leaving you with little recourse, aside from a bottle of gin.

Phishing emails and websites have become extremely sophisticated in the last year or so, that even veteran users might not be able to tell the difference between real messages and fake ones.

Here's what you can you do to protect yourself!

INSTALL A GOOD SPAM FILTER. Less crafty phishers won't properly spoof their messages, and spam filters will automatically delete them.

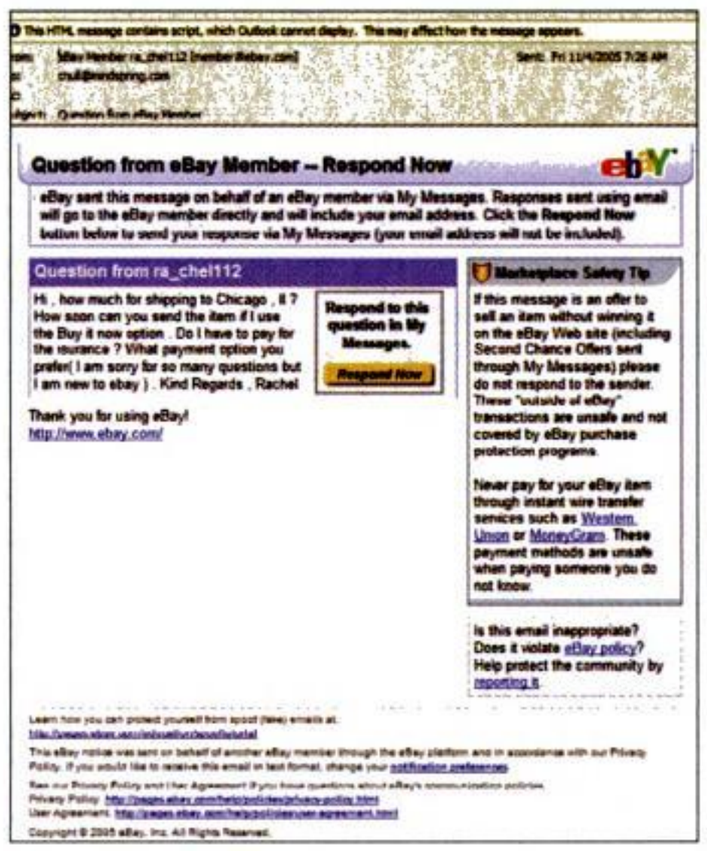
IGNORE ANYTHING WITH A TYPO OR BAD GRAMMAR. Your bank wouldn't send you a note about "loosing your fanincial reccords." (If it does, get a new bank.)

CHECK THE MESSAGE HEADERS. This used to be a reliable way to spot a scam, but spoofing has gotten to the point where most headers can be forged perfectly.

CUT AND PASTE. Don't click directly on a hyperlink in an email message—ever. If the email includes a visible URL, cut and paste it into your browser instead of clicking it. (Even though the visible text says **www.wellsfargo.com**, the actual hyperlink may go to **www.dirtycrooksrus.com**.)

GO DIRECT. If you get a message from PayPal about your account, just type **www.paypal.com** in your browser and log in directly. If the alert is real, it'll show up when you log in. There's no need—ever—to click a link in an email.

JUST DELETE IT. If you're feeling lazy, ignore any email you get from any company you do business with. If it's really serious, they'll call you.


Question from eBay Member -- Respond Now
eBay
eBay sent this message on behalf of an eBay member via My Messages. Responses sent using email will go to the eBay member directly and will include your email address. Click the Respond Now button below to send your response via My Messages (your email address will not be included).
Question from ra_chel112
Hi , how much for shipping to Chicago , Il ? How soon can you send the item if I use the Buy it now option . Do I have to pay for the insurance ? What payment option you prefer(I am sorry for so many questions but I am new to ebay) . Kind Regards , Rachel
Respond to this question in My Messages.
Respond Now
Thank you for using eBay!
http://www.ebay.com/
Marketplace Safety Tip
If this message is an offer to sell an item without winning it on the eBay Web site (including Second Chance Offers sent through My Messages) please do not respond to the sender. These "outside of eBay" transactions are unsafe and not covered by eBay purchase protection programs.
Never pay for your eBay item through instant wire transfer services such as Western Union or MoneyGram. These payment methods are unsafe when paying someone you do not know.
Is this email inappropriate? Does it violate eBay policy? Help protect the community by reporting it.

This phishing email is looks exactly like the real thing—it even offers a link to eBay's anti-phishing FAQ—and appears harmless because it doesn't ask for a password or alert you of faux danger. If you're selling something on eBay, it's extremely tempting to click the Respond Now link, which redirects you to a spoof site designed to steal your eBay password.

Copyrighted material

NUKE VIRUSES EVERY TIME

First the good news: Antivirus software has come a long way since the days of ThunderBYTE and Virex. The bad news is that viruses have too, and they've become so wound up with Trojan horses, spyware, keyloggers, and other malware that there's no longer even agreement on what a virus is.

Regardless of semantics, when it comes to getting rid of a virus, the best offense is a good defense: Install a solid antivirus application as soon as you set up a new PC, download all program and virus-definition updates, and turn on automatic updates and weekly drive scans in the system settings. (Trying to remember to manually update your definitions once a week is a headache.)

Next, configure your settings for maximum security. Some scanners let you set a rough paranoia level—low, medium, or high—and the high security modes rarely interfere with necessary computer operations. Make sure you configure your scanner to check inside compressed files: Most viruses are now delivered within ZIP archives because Microsoft *Outlook* automatically hides executable attachments.

IF YOU'RE INFECTED

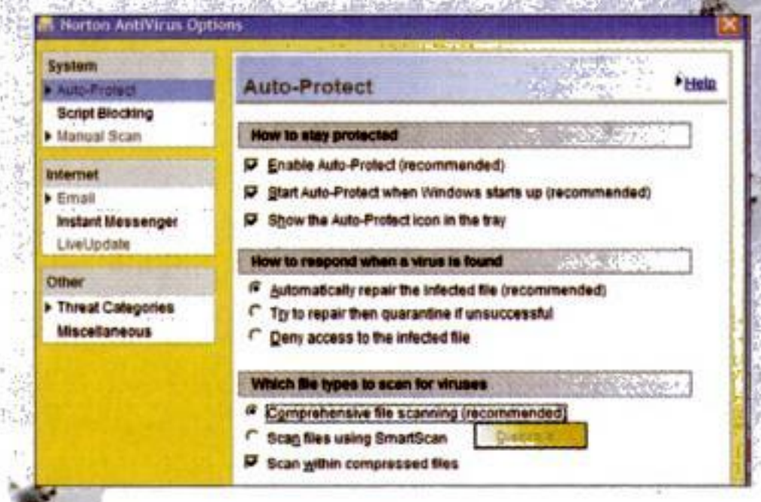
If, despite your best efforts, you become infected, virus removal can range from simple to nightmarish. Let your virus scanner try to clean the infection first, and boot into safe mode if you are having trouble running the app. Most antivirus programs also come with recovery CDs, and these can help in cases of extreme infection. The caveat: Virus definitions on these CDs are invariably out of date. Symantec's recovery disk can use the definitions on your hard drive (if they aren't corrupted), but this will only work if your definitions are up to date.

Some viruses can't be killed by off-the-shelf scanners, so you might have to resort to a specialized squasher, designed specifically to delete a certain class of virus. If you can ferret out the name of the virus you have (either through your antivirus software or by checking in the Task Manager), look online for a tool designed specifically for that infection. Most antivirus companies keep archives of removal tools, but these three are tops:

- **http://securityresponse.symantec.com/avcenter/tools.list.html**
- **http://www.kaspersky.com/removaltools**
- **http://vil.nai.com/vil/averttools.asp**

On some of these sites you'll also find beta DAT files and other helpful infection tools, in case you have a virus that no one has heard of yet.

If the scanner can't get it and there's no removal tool, you'll need to scrub the infection manually. Usually this means booting in safe mode and deleting the infected files, then editing the registry to remove traces of the infection. Instructions vary widely based on the virus, but a few minutes searching for the full name of the virus on Google will usually yield step-by-step instructions.



Most viruses come inside compressed files, so be sure to scan them.

KEY POINTS

DO install antivirus software as soon as humanly possible.

DO keep your definitions up to date with automatic updates.

DON'T assume that any file on your PC is automatically safe; many scanners won't check it until you attempt to open the file.

DO keep bookmarks of removal-tool web pages handy.

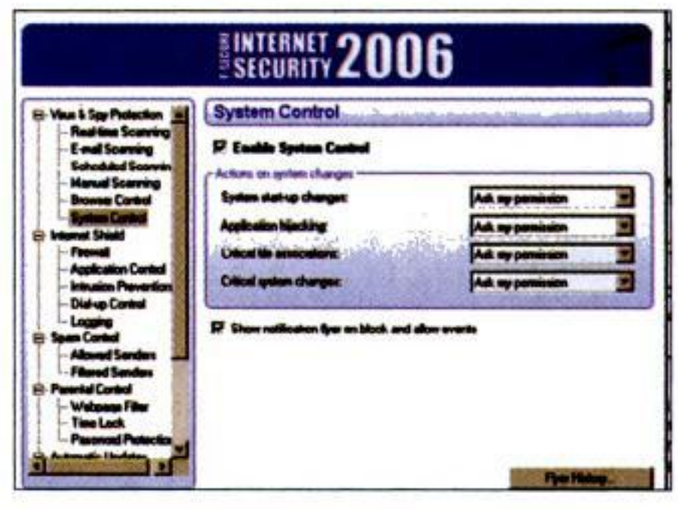
KEYLOGGERS, DIALERS, AND ROOTKITS

There exists a class of malware so horrible that most people have never even heard of it. What is all this stuff?

Keyloggers are designed to capture everything you type, the goal being to collect user names, passwords, and credit card numbers for transmission back to the lairs of evildoers. Most keyloggers are software, but hardware keyloggers, which attach between keyboard and PC, are also common. Spyware software will catch many keyloggers, but not all: Check your system using the free versions of *KL-Detector* (**http://dewasoft.com/privacy/kldetector.htm**) and *Anti-Keylogger* (**www.anti-keyloggers.com, trial version only**).

Dialers have been around for ages… and they're still with us. The goal of these little monstrosities is to make your modem dial expensive 900 or international toll numbers, use ridiculously overpriced third-party long distance services, and generally wreak havoc on your phone bill. The damage gets done late at night, so you don't know until a four-figure bill arrives in the mail. Consumers have had some luck getting these charges reversed (especially from third-party billers who can't shut off your phone), but a good defense is typically found in standard anti-spyware suites. (Stand-alone anti-dialer software really isn't worth the trouble.) The best defense, of course, is to simply get rid of your dialup modem.

Rootkits are the very worst of the bunch, comprising software that overwrites Windows system files with broken or malicious versions of the files, which turn your PC into a slave for the rootkit owner. Because they masquerade as legitimate files—in fact, deleting them outright would kill your PC—they are some of the most difficult malware apps to remove. Rootkits aren't fantasy: They were recently in the news when a rootkit was discovered lurking on some Sony audio CDs, crashing the machines that attempted to play them. Because they are so nefarious and deeply embedded in your OS, anti-rootkit software can be hit-or-miss. Sysinternals' *RootkitRevealer* (**www.sysinternals.com/utilities/rootkitrevealer.html**) is a savvy tool, and *F-Secure Internet Security 2006* (**www.f-secure.com/is/**) also includes a solid rootkit killer. Alas, many cases of rootkit infection require wiping the drive and starting from scratch.



***F-Secure Internet Security 2006* watches for system-level changes.**

Xtreme Fidelity™

Sound BLASTER®

Xtreme Fidelity MP3 Music

Make your MP3 music sound better than the original CD

Xtreme Fidelity Movies

Make your stereo DivX videos sound like DVD surround sound movies

Xtreme Fidelity Games

Get up to 40%* faster gaming performance and phenomenal surround sound with headphones

Xtreme Fidelity Audio Creation

Highest quality, most feature-rich recording available in a consumer solution

With 24 times more power than its predecessor, Sound Blaster X-Fi delivers amazingly crisp, clear Xtreme Fidelity audio playback, and the most realistic surround experience ever — with headphones or multichannel speakers. Upgrade your PC audio to Sound Blaster X-Fi for the most thrilling audio ever!

Hear to Believe

www.soundblaster.com

CREATIVE

*Based on performance testing in Battlefield 2.™ ©2006 Creative Technology Ltd. All other brands are trademarks or registered trademarks of their respective holders.

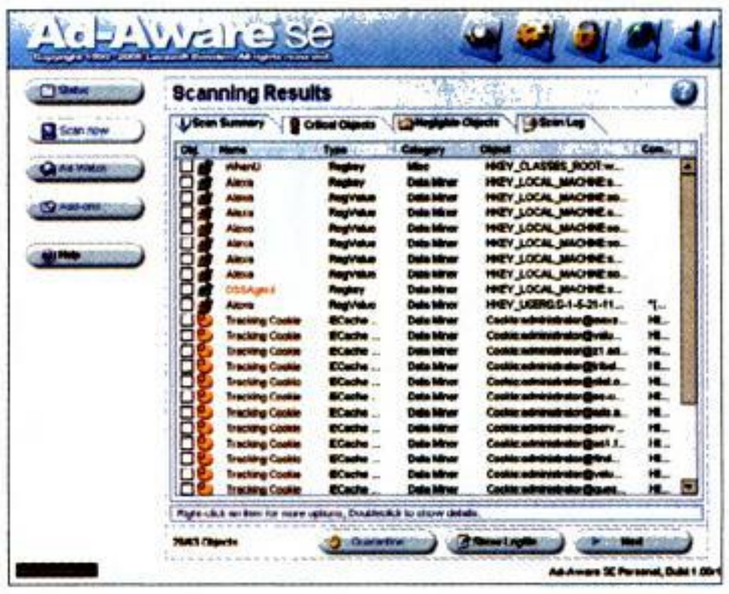
Copyrighted material

OUT SPYWARE LIKE IT'S VALERIE PLAME

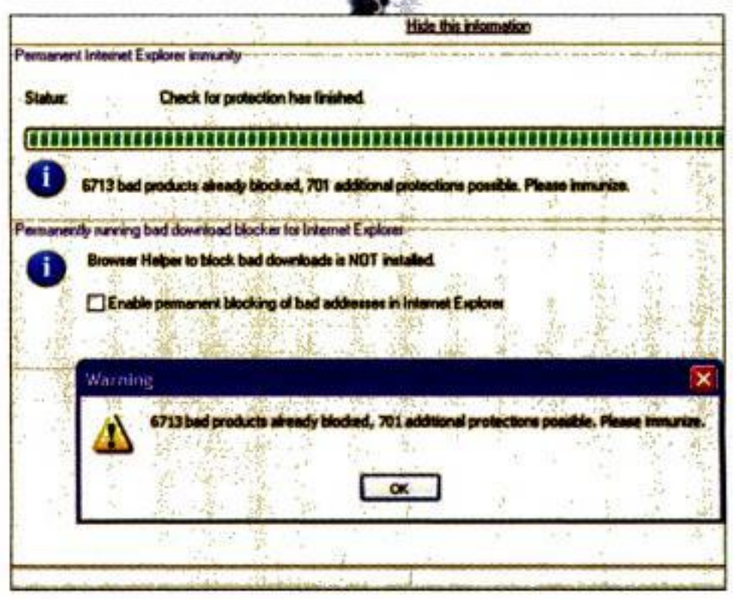
The line between spyware and virus is a blurry one, but never mind the lingo: It's a really bad line no matter where you draw it.

Spyware remains arguably the most active area of malware creation today. Because much of it can be delivered via the web (through exploits designed to take advantage of insecurity in web browsers, or by simply tricking you into clicking something you shouldn't), spyware infestations are incredibly common and exceptionally random. Though the industry is only a few years old, anti-spyware app *Spybot Search & Destroy* already includes more than 30,000 different spyware apps in its database.

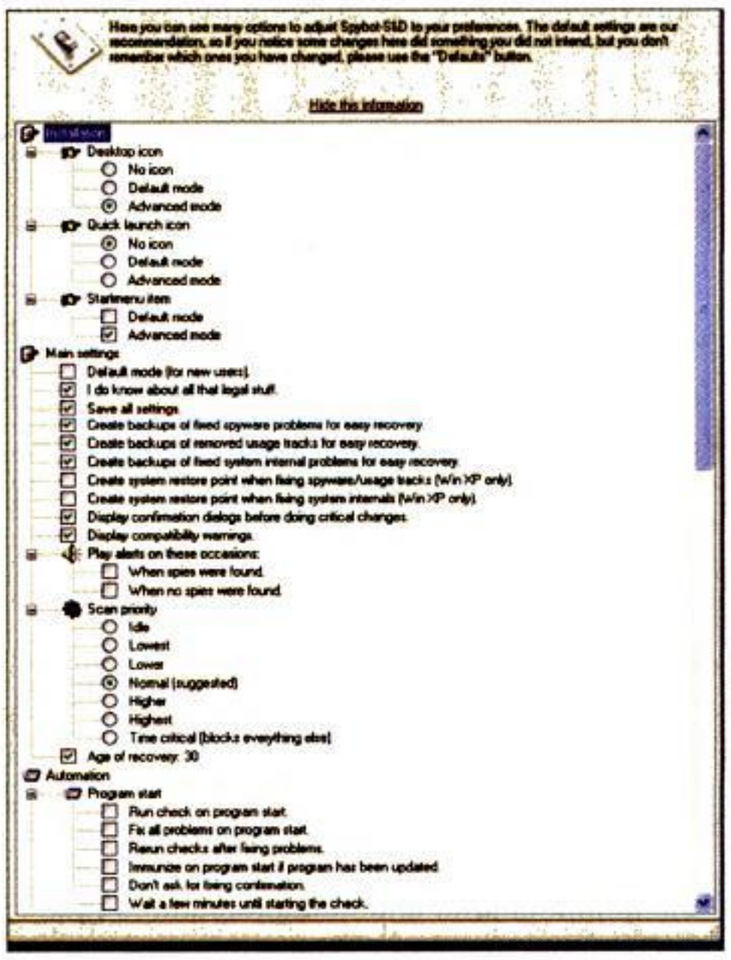
As with viruses, spyware can be easy to clean up or incredibly complex. The process for cleaning an infection is similar, with a few specific twists.



***Spybot* reports the system as clean, but *Ad-Aware* ferrets out 43 more infections.**


Hide this information
Permanent Internet Explorer immunity
Status: Check for protection has finished.
6713 bad products already blocked, 701 additional protections possible. Please immunize.
Permanently running bad download blocker for Internet Explorer
Browser Helper to block bad downloads is NOT installed.
Enable permanent blocking of bad addresses in Internet Explorer
Warning
6713 bad products already blocked, 701 additional protections possible. Please immunize.
OK

Take your medicine like a man: Immunization protects you from evil websites.


Hide this information
Installation
Desktop icon
No icon
Default mode
Advanced mode
Quick launch icon
No icon
Default mode
Advanced mode
Startmenu item
Default mode
Advanced mode
Main settings
Default mode (for new users)
I do know about all that legal stuff.
Save all settings
Create backups of fixed spyware problems for easy recovery
Create backups of removed usage tracks for easy recovery
Create backups of fixed system internal problems for easy recovery
Create system restore point when fixing spyware/usage tracks (Win XP only)
Create system restore point when fixing system internals (Win XP only)
Display confirmation dialogs before doing critical changes
Display compatibility warnings
Play alerts on these occasions:
When spies were found
When no spies were found
Scan priority
Idle
Lowest
Lower
Normal (suggested)
Higher
Highest
Time critical (blocks everything else)
Age of recovery: 30
Automation
Program start
Run check on program start
Fix all problems on program start
Rerun checks after fixing problems
Immunize on program start if program has been updated
Don't ask for fixing confirmation
Wait a few minutes until starting the check.

Make sure you enable advanced mode in *Spybot*. Basic is for losers.

RUN ALL YOU CAN

Because the pace of development in spyware is so frantic, and because different companies don't agree on what constitutes spyware, it's important to run several different applications if you suspect you have an infection.

Start with *Spybot Search & Destroy* (**www.safer-networking.org**). This free tool is the standard for anti-spyware software, and it does a generally great job of locating infections. The software isn't brainlessly intuitive, but it's simple enough to use.

First, put *Spybot* into Advanced mode via the Mode menu, then click the Update button to download the latest anti-spyware definitions. Run a full system scan with the Search & Destroy button. After you've cleaned out any infections, be sure to click the Immunize button. This modifies *Internet Explorer* and *Opera* by placing known spyware hosts in the Restricted Zone and making other useful tweaks.

When you're done with *Spybot*, run at least two other spyware scanners. *Ad-Aware* (**www.lavasoftusa.com**), *PestPatrol* (**www.pestpatrol.com**), and *Spy Sweeper* (**www.webroot.com**) all offer free or trial versions and are worth a quick install. Don't be surprised if all three find different infections. Also worth a look is Microsoft's new *Windows AntiSpyware* app (**www.microsoft.com/athome/security/spyware/software/**), currently in beta. It's free, and it can't hurt.

FOR THE SERIOUS INFECTION

Despite the cocktail of anti-spyware applications, chances are fair you'll still find yourself with a nagging infestation.

If so, you'll need to move to a more sophisticated tool. That tool is *HijackThis* (**www.spywareinfo.com/~merijn/**). *HijackThis* was designed to locate web browser hijacking software, but it's quite effective against any well-hidden or memory-resident application that you don't want running. Because it's designed for *severe* infections, it's not exactly simple to use. To the novice, the results page can by daunting, but don't fret. Simply save the log file, and paste it into the auto-analyzer at **http://hjt.iamnotageek.com**. You'll get an instant look at what's safe to keep, or safe to remove. If the analyzer doesn't help, go old-school and paste your log file at **http://forums.spywareinfo.com, http://boards.cexx.org**, or both. Help will usually arrive within a day or two in the form of someone who's experienced with your particular case. Be patient and polite.

KEY POINTS

DO install as many anti-spyware applications as you can.

DON'T assume that one application's clean bill of health means an infestation is eradicated.

DO familiarize yourself with HijackThis *before* your PC is compromised.

DO make nice on the message boards—you need their help more than they need your bitching.

The online *HijackThis* analyzer gives you instant info on what processes are OK and what aren't.

Copyrighted material

COMMON SENSE

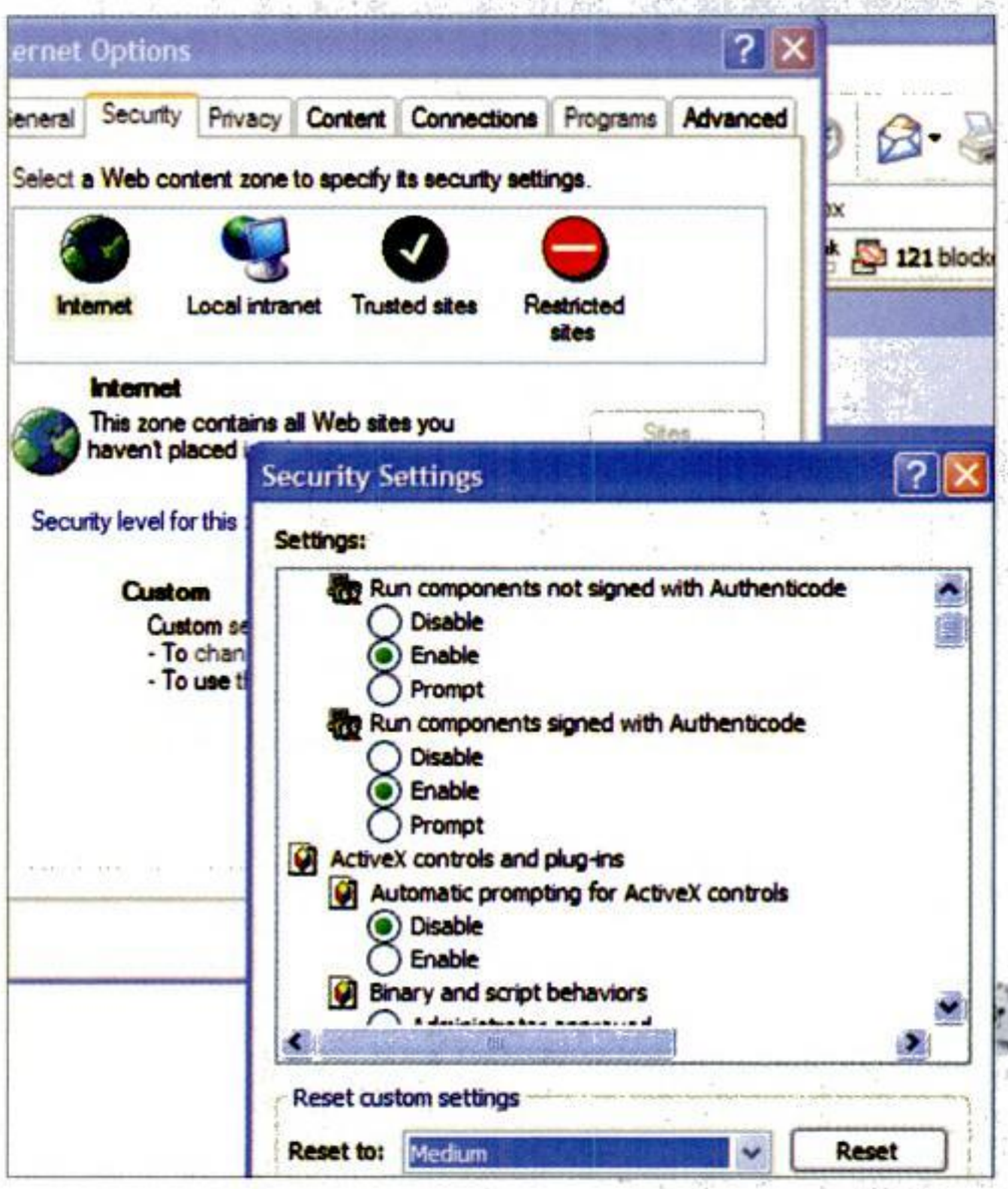
All this talk of viruses, spyware, and $1,000 phone bills may have you feeling a little nervous. That's not bad, because thoughtful caution and a little healthy paranoia are the most important things when it comes to keeping your PC malware-free.

We've had a PC running for the last two years without antivirus or spyware protection of any kind (though it is located behind a router-based firewall)—a scan today shows it to be as squeaky-clean as the day it was first turned on. The only protection this rig had was old-fashioned common sense.

To wit, here are *Maximum PC's* guidelines for safe computing. Follow them even if you've got the best malware protection on earth. Or else!

1 DON'T TRUST NOBODY! AND DON'T CLICK NUTHIN'!

Specifically we're talking about the web. All it takes is one misplaced click to install a spyware application on your machine, especially if you use *Internet Explorer.* One click, not the series of dialog boxes and "Are you sure?" messages you might expect. It can be a standard text link, image, Flash animation, anything. The most nefarious trick is that old standby, the pop-up advertisement. You've probably seen them, screens that look just like Windows error messages: "Your system may be vulnerable. Scan for spyware now?" Click OK and you won't be scanning for spyware, you'll be *installing* it. They even trick you through the closing of the ad. You'll often see two "x" close-window buttons in the right corner. Click the wrong one and you're actually clicking the ad (and installing malware), not whisking the ad away. How to deal with this? Foremost, stop pop-ups by enabling the pop-up blocker feature in your browser (all of them have this now), and installing the *Google Toolbar* (**http://toolbar.google.com**) for good measure. A few pop-ups will still trickle through. We recommend closing them by right-clicking their taskbar tab and clicking close (or Alt-F4). Then you don't risk accidentally clicking the ad.



Change the Medium security setting to High, to instantly beef up *Internet Explorer's* defenses.

2 BLOCK IMAGES IN YOUR EMAIL CLIENT

Most modern clients (and webmail apps) let you choose to keep images from loading in HTML emails you receive. This makes good sense, not just because clicking an image could launch a pop-up window (and thus a spyware install), but spam servers can log when images are received, even if you don't click them, thus verifying your email address is active.

3 DON'T OPEN ATTACHMENTS

You should know this by now. Most virus infections arrive via attachments in spam. If you don't open the attachment, you won't get infected.

4 DON'T CLICK LINKS IN EMAIL

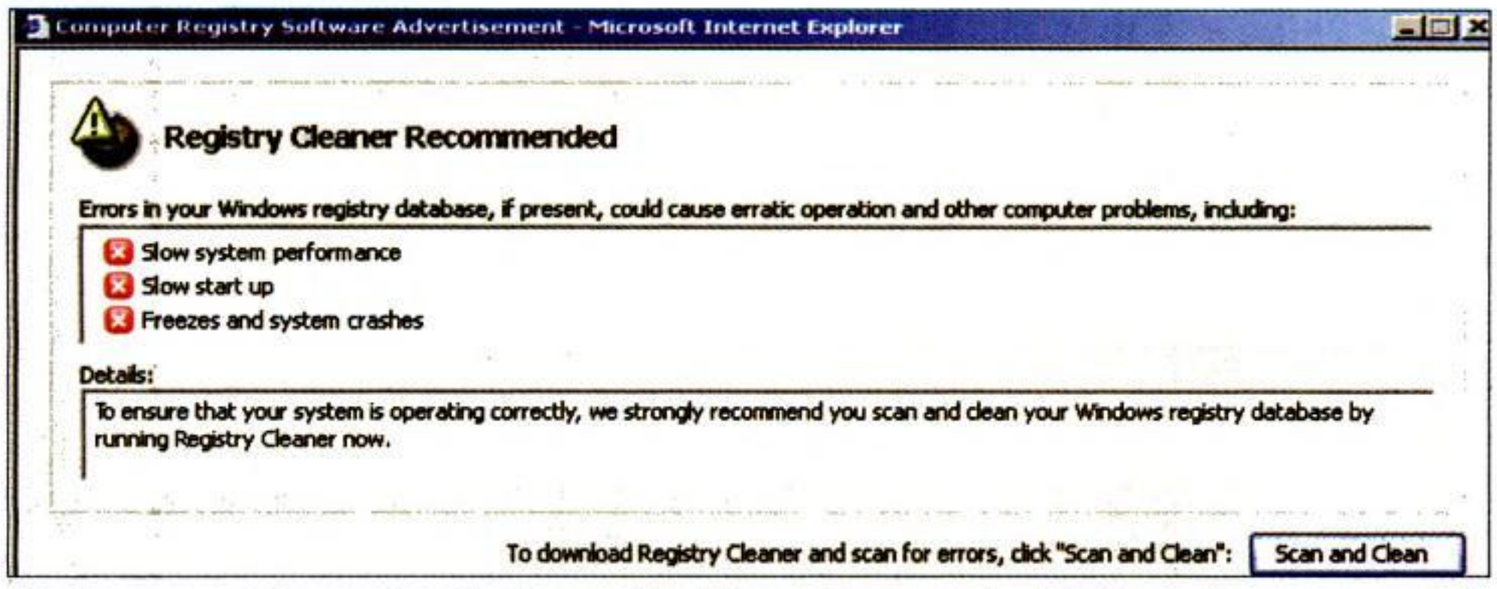
As mentioned in our section on phishing, HTML links can be easily spoofed to look innocuous. If you must visit a link that was mailed to you and you're certain it's not malicious, cut and paste the link. Better yet, manually type the link into your browser.

5 TURN UP IE SECURITY SETTINGS

If you're still using *Internet Explorer*, it doesn't hurt to turn up the default security settings in the browser. Click Tools > Internet Options > Security > Custom Level. You can simply change the custom setting to High at the bottom of the window, or tweak individual settings like disabling .NET components and Javascript applets.

6 WAREZ = HAXX

Come now, you don't think those cracker applications are made out of the kindness of some hacker's heart, do you? Be wary of anything that promises free access to anything you're supposed to pay for: commercial software, movies and music, passwords, and of course, porn.


Computer Registry Software Advertisement - Microsoft Internet Explorer
Registry Cleaner Recommended
Errors in your Windows registry database, if present, could cause erratic operation and other computer problems, including:
Slow system performance
Slow start up
Freezes and system crashes
Details:
To ensure that your system is operating correctly, we strongly recommend you scan and clean your Windows registry database by running Registry Cleaner now.
To download Registry Cleaner and scan for errors, click "Scan and Clean":
Scan and Clean

That's no security warning, that's an advertisement pop-up. Install the software as prompted and you're putting adware on your machine and exposing yourself to more pops.

7 FIX THE MESSENGER SERVICE

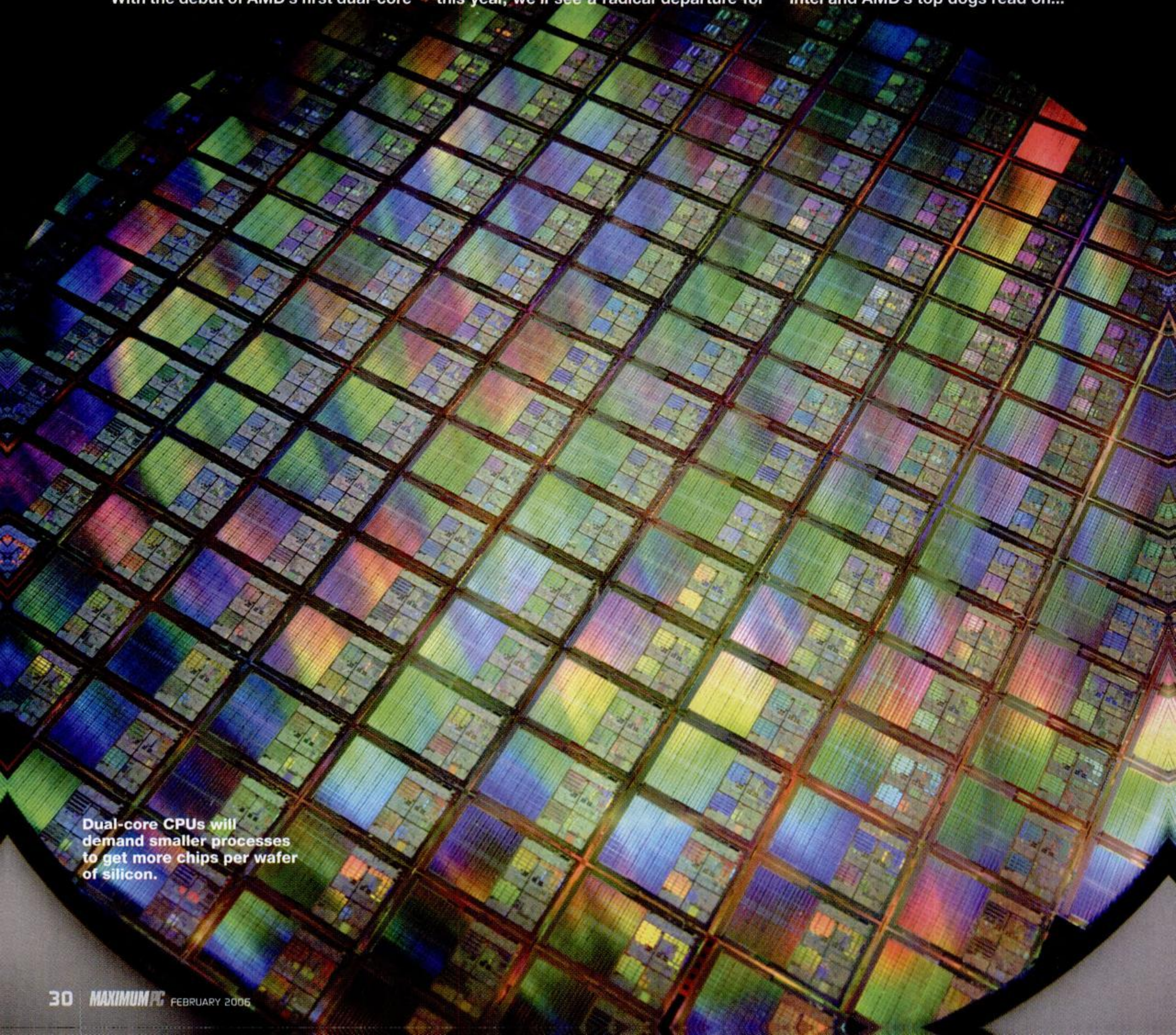
Pop-ups used to be able to sneak onto PCs through the back door: the Messenger Service, which works on different TCP and UDP ports than the browser. The good news is that Microsoft finally disabled Messenger with XP Service Pack 2. Make sure it's off by visiting Control Panel > Administrative Tools > Services. Click Messenger in the list to check its status. MPC

EVERYBODY'S DOIN' DUAL-CORE!

The end is nigh for single-core processors. Both Intel and AMD have unveiled their top-class next-gen parts, and there's nary a single-core proc to be found. Keep reading for the tech breakdown and first test results! BY GORDON MAH UNG

If you're still pushing tin using a single-core processor you're falling behind. Dual-core CPUs are the future of computing. Dual-cores let you do more, and do it faster.

With the debut of AMD's first dual-core Athlon 64 FX CPU and Intel's new smaller, and much cooler Pentium Extreme Edition, even the most die-hard single-core holdout has to admit the future is two cores. And that's just the beginning. Later this year, we'll see a radical departure for Intel processors as the company finally jettisons the Pentium 4's NetBurst microarchitecture for good, and we'll see both companies pave the way for CPUs with *more* than two cores. For a full preview of Intel and AMD's top dogs read on...



Dual-core CPUs will demand smaller processes to get more chips per wafer of silicon.

BEHOLD THE 955

Of the two processors being introduced, Intel's is the most radical departure from the previous generation. Code-named Presler, the Pentium Processor Extreme Edition 955 is built using Intel's new 65-nanometer process. It clocks in at 3.46GHz with 2MB of L2 and operates on a 1066MHz front-side bus. Like the Pentium Extreme Edition 840, Presler features Hyper-Threading on both cores, so your OS will think your rig houses four procs.

The new 65nm process is just what it sounds like—the transistors are about 30 percent smaller in the 955 than they were in the previous 90nm generation. Aside from the die shrink, the Presler core isn't that radical. It's pretty much the same Prescott 2MB core used in the 3.73GHz Pentium Extreme Edition.

For $999, the Pentium Extreme Edition 955 gets you a hell of a lot of transistors: 376 million in all!

Of course, it's never that simple. The 955 also brings virtualization technology to the table (see our sidebar on page 33 for more on Intel's new VT) and runs significantly cooler than the 90nm-based Prescott cores. Normally, heat and power dissipation drops when the process size shrinks, but that never really happened with the 90nm CPUs. Intel's 90nm chips, notably the Prescott, had a well-deserved reputation as mini nuclear reactors. Intel's not saying what the problem was, but the new chip's thermal performance is quite good. That should make overclockers happy. In fact, for kicks, we overclocked the 3.46GHz processor to 4.16GHz using the stock heatsink, and ran a few benchmarks. While a 90nm CPU would have crashed and set the room ablaze, the 65nm PEE 955 was surprisingly stable. With water-cooling, we think a reliable 4GHz should be possible.

Can AMD get more performance from its $1,031 Athlon 64 FX-60, which packs a mere 233 million transistors?

Intel should also benefit from the theoretically higher yields on the 65nm process. CPU cores are cut from wafers of silicon (like the one pictured on the facing page). If you think of each wafer as a sheet of bubble packing material, the smaller the bubbles, the more you can fit on the same size sheet. In fact, moving the exact same core from 90nm to 65nm shrinks the area it consumes on the die by 50 percent. Intel further enhances its yields with a technique new to the 955— packing two separate chips into a single CPU package. The first Intel dual-core, the Pentium D, was made from a single piece of silicon that contained two cores on it. With the 955, the CPU is made using two separate cores on two separate pieces of silicon that are linked together on the CPU package.

Intel's new approach has drawn flak, however. AMD says the method doesn't make the 955 a true dual-core processor, and some industry analysts agree, even calling it "cheating." Intel says it all depends on how you define "dual core." The company has used similar techniques with earlier chips, where the core was bonded into the CPU package alongside a separate cache chip. As long as the performance is good, we couldn't care less about the semantics.

For consumers, the upshot of all this is that next-gen Intel CPUs should be much cheaper. If Intel passes along its savings, we could see really, really cheap dual-core CPUs in 2006.

HOLY TOLEDO! IT'S THE FX-60

Last year was a cakewalk for AMD. Both its single-core FX series, and its dual-core X2 CPUs were superior to their Intel counterparts. Hell, the closest competitor to the Athlon 64 FX-57, wasn't Intel's 3.73GHz P4EE, it was the Athlon 64 X2 4800+. So what does AMD do for 2006: introduce a 3GHz Athlon FX-59 single-core or pull the trigger on a dual-core FX?

The answer is dual-core. Based on the Toledo core that gave the X2 its ass-kicking abilities, AMD is betting that performance enthusiasts—the typical FX CPU customers—are willing to sacrifice a few MHz of clock speed for an extra CPU core. The FX-60 is essentially two 2.6GHz cores with 1MB of L2 each, based on a 90nm process using silicon-on-insulator technology. AMD likes to point out that despite Intel's reputation as the king of process, AMD's 90nm chips have no overheating problems. In fact, the dual-core FX-60 is just a 110-watt processor, considerably lower than the 130 watts of the 90nm-based Pentium D. And because the FX-60 is a Socket 939 chip, it'll drop into and work with 99 percent of the existing Athlon 64 motherboards on the market. You can't say that about Intel, which doesn't seem to understand how much it sucks to introduce a new CPU that works with only a brand-new chipset. Yup, that's right. Intel's 955 processor won't work with the 955X chipset, only the 975X.

The FX-60, like the X2, uses a shared memory controller between the two cores, but the chips communicate via a high-speed cross-bar interface, which is more efficient than communicating via the front-side bus, the way Intel's dual-cores talk.

The only real knock against the FX-60 is that it's an evolution of the X2 4800+, rather than a revolution. But if that evolution is based on an already outstanding processor, who can complain?

Still not convinced that dual-core is the way to go? Turn to this month's In The Lab on page 58 to see what happened when we forced one of our most adamant "single-core" editors to switch to dual-core for a month.

PHOTOGRAPH BY MARK MADEO

CPU-on-CPU Action

The silicon meets the road in our hands-on tests of AMD and Intel's new CPUs

For our showdown, we selected a raft of benchmarks that test multitasking, multithreading, and straight-up gaming performance. *SYSmark2004* uses both multitasking and multithreaded apps to stress system performance. Our Adobe *Premiere Pro* video-editing and –exporting benchmark is also multithreaded, as is Ahead's *Nero 7* and the now defunct but still good *DVD Shrink.* Despite what Adobe says, we've found that *Photoshop* doesn't stress dual-core processors; and games are all single-threaded.

For the Intel tests, we used the Pentium Extreme Edition 955 in a new Intel D975XBX mobo with 2GB of Corsair Micro DDR2/667, a Creative Labs Audigy 2 ZS, and a 160GB Seagate drive. Our Athlon 64 FX-60 used 2GB of Corsair Micro DDR400 RAM in an Asus A8N32-SLI Deluxe mobo and the same soundcard and hard drive as our Intel system. Because of a bug in the current nVidia graphics driver that artificially drags down *SYSmark 2004* scores, we installed an ATI Radeon X800 XT for the *SYSmark2004* runs. We ran a single GeForce 7800 GTX for the remainder of the tests.

BENCHMARKS

	ATHLON 64 FX-60	PENTIUM EXTREME EDITION 955
SYSMARK2004 OVERALL	**260**	238
SYSMARK2004 CONTENT CREATION	**354**	313
SYSMARK2004 OFFICE PRODUCTIVITY	**191**	181
ADOBE PREMIERE PRO MPC ENCODE (SEC)	562	**459**
ADOBE PHOTOSHOP CS MPC TEST (SEC)	**279**	320
3DMARK05 OVERALL	**7,666**	7,297
3DMARK05 CPU	6,741	**7,111**
3DMARK03 OVERALL	17,073	**17,177**
3DMARK03 CPU	**1,385**	1,129
PC MARK 05 OVERALL	6,067	**6,168**
PC MARK 05 CPU	5,346	**6,041**
QUAKE 4 (AVG FPS)	**167**	130
FEAR (AVG FPS)	**241**	192
NERO 7 RECODE (SEC)	**1,800**	2.880
DVD SHRINK MPEG-2 TRANSCODE (SEC)	2,220	**2,040**

**Best scores are bolded.*

The Bottom Line

NetBurst comes up short again as the FX-60 holds the lead

We expected the FX-60 to be the winner coming into this competition, and we weren't surprised. Despite the faster FSB and double the L2 cache over the previous dual-core Extreme Edition, the Pentium Extreme Edition 955 still gets spanked by the Athlon FX-60. There are a few bright spots for Intel: The NetBurst-based CPUs continue to be much faster in Adobe *Premiere Pro,* which translates into superior performance in the multithreaded *Premiere Elements 2.0.* The 955 also saw an 8.8 percent lead in our *DVD Shrink* transcode, and some marginal performance leads in the synthetic *PCMark 05* and *3DMark05.* The bad news came everywhere else. The FX-60 was about 9.4 faster in *SYSmark2004*, and it spanked the 955 in the games that matter: *Quake IV* and *FEAR*. The FX-60 also had a slight lead in *3DMark05.* In our transcoding test—we convert an MPEG-2 movie into *Nero's* MPEG-4 format for playback on Sony PSP units—the FX-60 was 60 percent faster, a stunning victory and probably why AMD is giving away *Nero* to some dual-core CPU buyers. AMD also continues to be faster in *Photoshop CS,* to the tune of almost 15 percent. We're calling this one for AMD even though the 955 performed better than expected. If Intel manages to get the 65nm procs up into the 4GHz range, AMD had better watch out!

Copyrighted material

The 2006 CPU Preview

Both AMD and Intel say quad-core is on the way

We started the year off with a pair of dual-core bangs, and continue with sonic booms throughout 2006. Here's the intelligence chatter we've gathered on what's coming from Intel and AMD's labs and fabs. As anyone who follows CPU roadmaps knows, plans frequently change, so know that nothing here is chiseled in silicon.

GOODBYE, PENTIUM 4

Intel will make a 180-degree course change this fall or winter when it introduces the processor code-named Conroe. Although Intel calls it a blend of the P4's NetBurst architecture and the Pentium M, the processor's microarchitecture is primarily derived from the Pentium M's original Banias core. Beyond that, not much is really known about Conroe, except that it will be a single die with two cores. Intel has said the cores will communicate across the L1 cache instead of using the much slower front-side bus like its current dual-cores. The L2 cache will also be "smart" and configurable. If an application spawns only a single thread and the CPU senses that, both 2MB L2 caches can be combined to form a single huge 4MB cache, to enhance performance.

And unlike the super-long 31-stage pipeline of the Pentium 4/D/Extreme, Conroe will feature a wider and shorter 14-stage pipeline that's tuned to offer great performance in the 2GHz range. As for the company's current practice of using two chips in a single package, the company says the same technique can be used in the future to, say, put two single-die, dual-core processors into the same package to make a quad-core processor. Yum.

STEADY AS SHE GOES FOR AMD

When you're in front (in performance, anyway), you don't want to make crazy left and right turns. So, predictably, AMD is playing it safe and not spilling the beans on its future procs. What we do know is that AMD will finally turn the key on DDR2 by integrating a DDR2 controller into the core of its upcoming CPU, code-named Windsor. The new chip will continue to use AMD's 90nm process. To prevent consumers from jamming a DDR2 CPU into an older DDR motherboard (which wouldn't work) AMD will also introduce a new socket. The company will also continue to enhance its power and thermal management to make cool CPUs run even cooler in notebooks. This year we should see the first CPUs with AMD's virtualization technology, called Pacifica, as well as the company's Presidio trusted-computing technology, which is similar to Intel's La Grande. We'd expect Athlon 64 dual-cores to stay in the 2.6GHz to 2.8GHz range, but with support for DDR2 this year. On the longer forecast, AMD has said it will have its first quad-core server CPUs at the end of next year. We can't wait. MPC

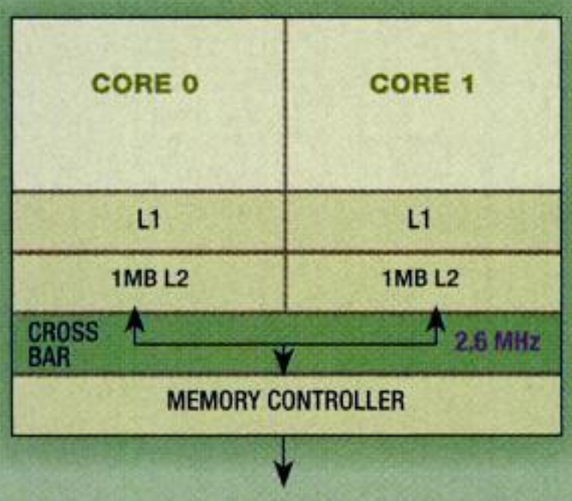
VIRTUALIZATION

Intel now officially has three CPUs with virtualization technology, which allows the chips to run more than one OS at a time. This isn't the same as VMWare's *Workstation* or Microsoft's *Virtual PC,* which let you run a virtual computer using a special application within the primary OS. The latter method is OK, but if you bring down the host OS, the virtual PC goes with it. VT support allows both operating systems to exist at the same time in parallel. It's unclear how that will work in the real world, but the upshot is that one OS can crash and restart independently of the other.

That means that with VT you should be able to spawn separate OS sessions for mission critical tasks, to prevent one bad app from bringing down your entire system. If one of your sessions tanks, the others are unaffected. AMD plans to unveil its own virtualization technology, called Pacifica, later this year.

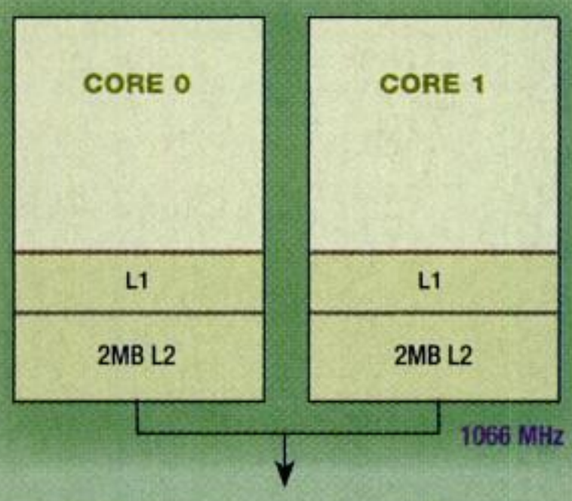
HOW THEY WORK — Intel and AMD's dual-cores dissected

ATHLON 64 FX-60



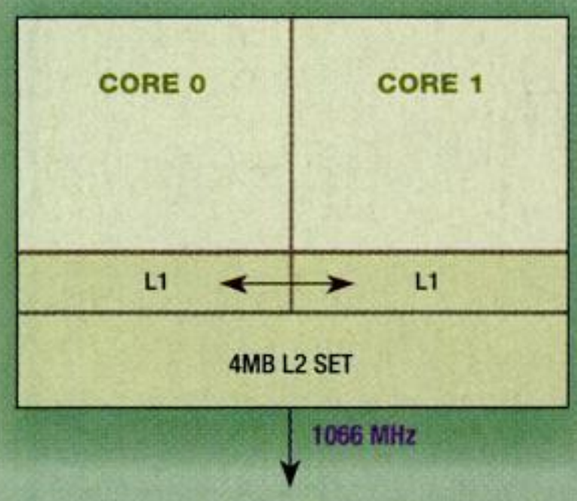
►Just like the Athlon 64 X2, the new Athlon 64 FX-60 dual-core uses a high-speed crossbar for communication between the CPU cores instead of using the slower front-side bus like on current Intel dual-core processors. It's akin to using a common entryway in a duplex house to go between units.

PENTIUM EXTREME EDITION 955



►The P955 is similar to the Pentium D, in that both chips must communicate via the front-side bus outside of the CPU. Although the 955's front-side bus is faster than the 800MHz FSB in the Pentium D, it's still like having to go all the way out to the sidewalk to cross between units in a duplex.

INTEL "CONROE" CPU



►Intel expects the Conroe CPU to put the company back in the game later this year. Although the details aren't entirely clear, it appears that Conroe's two cores can communicate across the L1 cache. Also, the L2 is "smart" and shared by the cores for applications that do not spawn multiple threads. This can effectively give the proc 4MB of L2 and hopefully combat AMD's crossbar design.

Copyrighted material

MonarchComputer.com™

"We Have What You're Looking For!"

Buy Online or by phone: 1-800-611-0875
Paypal - Visa - Mastercard
Discover - AMEX

Take the Monarch Challenge:
Give us 5 minutes and SAVE
$100s if not $1000s!
Create & Save Quick Quotes!
Lock-in pricing for up to 7 days!

AMD Solution Provider PLATINUM

AMD Opteron™ (939) Combos

FREE SETUP and TESTING on ALL COMBOS!

- Asus A8V K8T800 Pro Audio/GB-LAN/USB/SATA w/AMD Opteron™ processor 148 — Only $309
- MSI K8N NEO4 Platinum Audio/GB-LAN/PCI-E IEEE-1394/SATA AMD Opteron™ processor 152 — Only $905
- Abit AN8 Ultra nF4 Audio/GB-LAN/USB/IEEE-1394 PCI-E/SATA3G/RAID w/AMD Opteron™ processor 165 (Dual-Core) — Only $465
- Tyan S2865AG2NRF nForce4 Video/Audio/GB-LAN IEEE-1394a/PCI-E/SATA3G w/AMD Opteron™ processor 180 (Dual-Core) — Only $979

AMD Athlon™ 64/FX (939) Combos

1, 2 and 3 year Monarch warranty options available

- ASRock 939Dual-SATA2 Audio/LAN/PCI-E/SATA3G AMD Athlon™ 64 processor 3200+ — Only $239
- DFI NF4 Infinity Audio/GB-LAN/PCI-E/SATA AMD Athlon™ 64 processor 3700+ — Only $319
- Asus A8N-SLI NForce4 SLI Audio/GB-LAN IEEE-1394/PCI-E/SATA AMD Athlon™ 64 processor 4000+ — Only $455
- Abit AN8 SLi nForce4 Audio/GB-LAN/USB IEEE-1394/PCI-E/SATA3G AMD Athlon™ 64 processor FX-60 — Only $1177

AMD Athlon™ 64 - Industry-leading performance today; ready for tomorrow's 64-bit software

AMD Athlon™ 64 X2 Combos

All Monarch Combos Include cables, manuals and drivers
All Monarch Combos usually ship in only 2-3 business days!

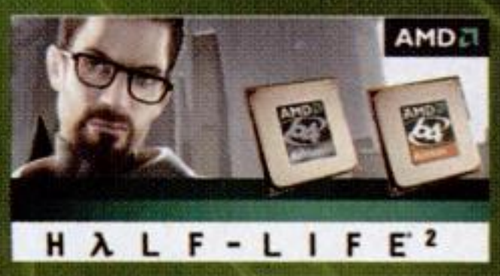
- MSI K8N NEO4-F Audio/GB-LAN PCI-E/USB/SATA AMD Athlon™ 64 X2 processor 3800+ — Only $375
- Asus A8N-E nForce4 Audio/GB-LAN/USB PCI-E/SATA3G AMD Athlon™ 64 X2 processor 4400+ — Only $585
- Asus A8N-SLI Premium nForce4 SLI Audio GB-LAN/IEEE-1394/SATA3G AMD Athlon™ 64 processor 4600+ — Only $729
- DFI Lanparty UT NF4 SLI-DR Expert Audio/GB-LAN/IEEE-1394 PCI-E/SATA3G AMD Athlon™ 64 X2 processor 4800+ — Only $849

The AMD Athlon™ X2 dual-core processor enables everyone to do more in less time by delivering exceptional multi-tasking capabilities and increased performance on digital media.

nero 7 ULTRA EDITION with an upgrade to AMD Athlon™ 64!

FREE! FREE! FREE!

Get Nero 7 Ultra Edition, Half-Life 2, a LIVESTRONG™ Wristband, and a FREE GIFT when you upgrade to Athlon 64/FX/X2 or the new Opteron 100 Series (939)!



Purchase any AMD Athlon™ 64/FX/X2/Opteron 100 (939) bundle from Monarch and get Nero 7 Ultra, Half-Life 2, choice of FREE GIFT and a LIVESTRONG™ wristband for helping Monarch support the battle against cancer. Monarch Computer and you can make a difference.

ONLY MONARCH CAN DELIVER ALL THIS WITH YOUR UPGRADE! Get OVER $100 in FREE SOFTWARE, GIFTS and MORE - With any of these Combos, Barebones, or Systems!

Educational and Government POs Welcome.

GSA Schedule Contract GS-35F-0202P

Commercial leasing available for purchases as low as $1000.

Prices subject to change without notice. Monarch Computer not responsible for typographical errors.

We ship to the Continental U.S., Alaska, Hawaii, APOs, Puerto Rico, and Canada

AMD, the AMD Arrow logo, AMD Athlon, and combinations thereof, are trademarks of Advanced Micro Devices, Inc. All brands and product names are trademarks or registered trademarks of their respective companies. AMD model numbers indicate relative software performance among this AMD processor family. *Enhanced Virus Protection (EVP) is only enabled by certain operating systems including the current versions of Microsoft® Windows®, Linux, Solaris, and BSD Unix. After properly installing the appropriate operating system release, users must enable the protection of their applications and associated files from buffer overrun attacks. Consult your OS documentation for information on enabling EVP. Contact your application software vendor for information regarding use of the application in conjunction with EVP. AMD and its partners strongly recommend that users continue to use a third party anti-virus software as part of their security strategy.

AMD Sempron™, Athlon™ 64/FX/X2, Opteron 100 Series (939) Barebones

AMD Sempron™ - Redefining everyday computing. AMD Athlon™ 64 Processors feature AMD 64 Technology, Cool'n'Quiet™ Technology, HyperTransport™ Technology & Enhanced Virus Protection for the Microsoft® Windows® XP- SP2

Monarch 1150 USB 2.0 Tower Case
w/300W PS
MSI K8T Neo-V Motherboard
AMD Sempron™ Processor 2800+
Starting @ $209

Asus VENTO 3600 Mid-Tower Case
w/485W PS
Abit AN8 SLi nForce4 Motherboard
AMD Opteron™ processor 146
Starting @ $595

Antec SLK1650B Black Mini Tower
w/350W PS
Gigabyte GA-K8NSC-939 Motherboard
AMD Athlon™ 64 processor 3700+
Starting @ $385

Cooler Master Praetorian 730
(Silver) w/510W SLI PS
Asus A8N32-SLI Deluxe nForce4 SLI
AMD Athlon™ 64 processor FX-60
Starting @ $1599

Antec Sonata II Piano Black
Mid-Tower w/450W PS
Abit KN8 nF4 Motherboard
AMD Athlon™ 64 X2 processor 3800+
Starting @ $499

Lian-Li PC-60 Plus Aluminum Case
w/535W PS
DFI Lan Party UT NForce4 Ultra-D
AMD Athlon™ 64 X2 processor 4600+
Starting @ $845

Enermax Pandora CA3030BS Black/Silver
w/400W PS
DFI K8T800PRO-ALF
AMD Sempron™ processor 3400+
Starting @ $285

Antec SLK3000B ATX Mid Tower
w/ATX 2.01 485W PS
MSI K8N NEO4 Platinum
AMD Opteron™ processor 165 (Dual-Core)
Starting @ $625

Cooler Master TAC-T01-E1C
WaveMaster Aluminum Case w/400W PS
EVGA 133-K8-NF43-AX NForce4
AMD Athlon™ 64 processor 3800+
Starting @ $609

MGE Red Dragon Midtower case
w/500W ATX 1.3 PS
DFI Lan Party UT nF4-D Motherboard
AMD Athlon™ 64 processor 4000+
Starting @ $639

Antec Performance TX1050B SOHO
w/500W PS
Abit KN8 SLI nF4 Motherboard
AMD Athlon™ 64 X2 processor 4200+
Starting @ $619

Thermaltake Shark Full Tower
(Silver) w/510W SLI PS
Abit AN8 SLi nForce4
AMD Athlon™ 64 X2 processor 4800+
Starting @ $1195

Monarch Barebones include: case, motherboard, CPU w/fan, and Set-up and testing by AMD Certified Technicians - All for only $18.00! - Usually ships in ONLY 3-6 business days!

Lowest Prices on AMD CPUs!

AMD Athlon™ 64 Retail Box CPUs
AMD Athlon™ 64 3000+ (939) $109.00
AMD Athlon™ 64 3200+ (939) $152.00
AMD Athlon™ 64 3500+ (939) $201.00
AMD Athlon™ 64 3700+ (939) $233.00
AMD Athlon™ 64 3800+ (939) $282.00
AMD Athlon™ 64 4000+ (939) $334.00
AMD Athlon™ 64 FX-57 (939) $811.00

AMD Athlon™ 64 X2* Retail CPUs
AMD Athlon™ 64 X2 3800+ $284.00
AMD Athlon™ 64 X2 4200+ $363.00
AMD Athlon™ 64 X2 4400+ $467.00
AMD Athlon™ 64 X2 4600+ $556.00
AMD Athlon™ 64 X2 4800+ $643.00
AMD Athlon™ 64 FX-60 (939) $1011.00

AMD Opteron™ Dual Core OEM CPUs (939 pin)
AMD Opteron™ 165 1.8GHz $270.00
AMD Opteron™ 170 2.0GHz $356.00
AMD Opteron™ 175 2.2GHz $461.00

AMD Opteron™ OEM CPUs (939)
AMD Opteron™ 146 2.0GHz (939) $121.00
AMD Opteron™ 148 2.2GHz (939) $207.00
AMD Opteron™ 150 2.4GHz (939) $311.00
AMD Opteron™ 152 2.6GHz (939) $775.00

Components and Upgrades

1000s of In-Stock Components!
FREE SHIPPING on 100s of items!

150419
Seagate (ST3400832AS)
400 GB 7200 RPM
8MB Cache SATA
$235.00

100340
PC Power & Cooling
1000W SLI/EPS TC1KW
Power Supply
$459.00

190538
ATI (Connect3D) Radeon
X1800 XT 512MB GDDR3
PCI-E/AVIVO/Dual-DVI
$529.99

150034
Seagate (ST3300831AS)
300 GB 7200 RPM
8MB Cache SATA
$152.00

101056
NZXT Lexa Mid-Tower
ATX 2.0 Case No PS
(Silver/Black)
$127.99

190533
ATI (Connect3D)
Radeon X800 GTO
256MB GDDR3/PCI-E/VIVO/DVI
(Retail Box))
$179.99

CORSAIR

Monarch Systems feature Award-winning Corsair Memory

140751
1 GB DDR (400) PC-3200
REG ECC Corsair
Low Profile
(CM72SD1024RLP-3200)
$126.00

141001
2 GB (2 pcs 1GB)
DDR (437) PC-3500
Corsair w/LED Display
(TWINX2048-3500LLPRO)
$306.00

Online price leader for Corsair modules!

AMD Athlon™ 64 - The first Windows®-compatible 64-bit PC processor.

*The AMD Athlon™ 64 X2 dual-core processor provides the same level of system features customers have grown to expect with the AMD Athlon™ 64 product family: HyperTransport™ technology - Enhanced Virus Protection for Microsoft® Windows® XP- SP2 - Cool'n'Quiet™ technology

ONLY MONARCH CAN DELIVER ALL THIS WITH YOUR UPGRADE!
Nero 7 Ultra Edition, Livestrong Wristband, Half-life 2 & a FREE GIFT!
Along with the best parts, prices, service and support in the industry!

Copyrighted material

MonarchComputer.com™

OFFICIAL ATI SYSTEM INTEGRATOR

Monarch Adversary™ Custom Gaming Desktop (PCI-E)

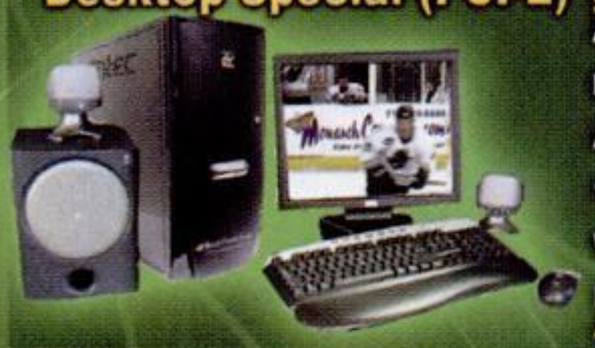
Keyboard, monitor, and speakers available seperately - see website for all accessories.

Ask for Part #: 80501
AVAILABLE COMPONENTS:
Choice of Case and Power Supply
Choice of name-brand Motherboard
Choice of AMD Athlon™ 64/FX/X2
- includes heatsink and fan
Choice of name-brand memory
Up to 3 name-brand Hard Drives,with optional RAID setup (1 or 0)
Up to 2 name-brand Optical Drives from CD-ROM upto Dual-Layer DVD Writes
Choice of Floppy Drive
Choice of ATI PCI-E graphics card
Choice of name-brand sound card
Network options from modem to wireless
Choice of OS including Microsoft Windows XP Home, Professional, and Media Center
Industry Standard Upgradable
Full line of peripherals and accessories
1 or 3 year warranties available
24/7 on-site service available

Dominate the competition with your dream rig!

Starting @ ONLY **$439!**

Monarch Adversary™ Value Gaming Desktop Special (PCI-E)



Keyboard, monitor, and speakers available seperately - see website for all accessories.

Ask for Part #: 90660
SELECTED COMPONENTS:
Antec Sonata II Piano Black Quiet Mid Tower w/450W Power Supply
DFI NF4 SLI Infinity Motherboard
Onboard Audio, SATA3G, Gb-LAN, FireWire
AMD Athlon™ 64 3500+ 512K (939)
- includes AMD Certified heatsink
1 GB (2 pcs 512) DDR (400) PC-3200 Corsair (VS1GBKIT400)
Western Digital Caviar SE 160 GB SATA3G 8MB Cache 7200 RPM (WD1600JS)
NEC ND-3550A 16X Dual Layer DVD±RW
ATI (Connect3D) Radeon X800 GTO 256MB GDDR3|PCI-E|VIVO|DVI
Optional choice of Microsoft Windows OS
Industry Standard Upgradable
USB Ports on front of case
1 or 3 year warranties available
24/7 on-site service available

SPECIAL OFFER! $50 OFF! - Was $895 - Now $845!

ATI RADEON XPRESS 200
CROSSFIRE MULTI-GPU READY

CrossFire™ - Multi-GPU:

Multiply & Conquer
CrossFire ignites an entirely new gaming experience by accelerating all your games, all the time, with the power of multiple GPUs within a single PC.

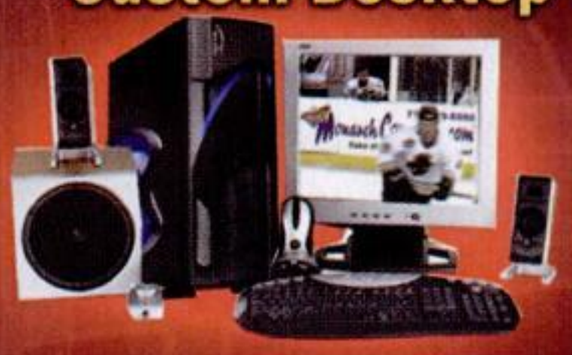
Unite and Dominate
Combined Multi-GPU power that soars into a new dimension of graphics capability

Divide and Conquer
High-performance GPU sharing that accelerates all games, all the time.

Render and Rule
The highest image quality and screen resolutions even with the most demanding 3D titles.

Now and Future
Keep ahead of fast-moving gaming effects and technology changes with CrossFire's advanced features.

Monarch Adversary™ Crossfire Edition Custom Desktop



Keyboard, monitor, and speakers available seperately - see website for all accessories.

Ask for Part #: 80777
AVAILABLE COMPONENTS:
Choice of Case and Power Supply
ATI Radeon® Xpress 200 CrossFire™ mainboard from DFI
Choice of AMD Athlon™ 64/FX/X2
- includes heatsink and fan
Choice of name-brand memory
Up to 3 name-brand Hard Drives,with optional RAID setup (1 or 0)
Up to 2 name-brand Optical Drives from CD-ROM upto Dual-Layer DVD Writes
Choice of Floppy Drive
ATI Radeon® X1800 CrossFire™ Card or or Radeon® X850 CrossFire™ Card with optional second card for dual GPU rendering
Choice of name-brand sound card
Network options from modem to wireless
Choice of OS including Microsoft Windows XP Home, Professional, and Media Center
Industry Standard Upgradable
Full line of peripherals and accessories
1 or 3 year warranties available
24/7 on-site service available

Experience the power of ATI's Crossfire Technology and take your gaming to new heights!!

Starting @ ONLY **$569!**

HORNET PRO

THE MOST POWERFUL & UPGRADABLE SFF SYSTEM AVAILABLE TODAY...

BEST PORTABLE WORKSTATION

MAXIMUM PC KICK ASS PRODUCT

CPU COMPUTER POWER USER

Computer Games ★★★★★ Five of Five Stars

Selected Athlon™ 64|FX|X2| Opteron 100 Barebones!
See website for complete selections available

Check out the Monarch Hornet Pro GameRiot Monster Special Edition custom vinyl wrap

Monarch Hornet Pro u-ATX (Black)
w/Enermax EG285SX-VB(W)SFMA Micro ATX 270W Power Supply
Gigabyte GA-K8N51GMF-9 nF4 MB
AMD Athlon™ 64 processor 3500+
Starting @ $479

Monarch Hornet Pro u-ATX (Silver)
w/Topower TOP350FX Micro ATX 350W PS
MSI RS482M4-ILD ATI RS482
AMD Opteron™ processor 165 (939 dual-core)
Starting @ $689

Monarch Hornet Pro u-ATX (Silver)
w/Enermax EG285SX-VB(W)SFMA Micro ATX 270W Power Supply
MSI RS482M4-ILD ATI RS482
AMD Athlon™ 64 processor 3700+
Starting @ $639

Monarch Hornet Pro u-ATX (Indigo)
w/Topower TOP350FX ATX 12V 350W PS
MSI RS482M4-ILD ATI RS482
AMD Athlon™ 64 FX-60 processor
Starting @ $1369

ALSO AVAILABLE IN 6 CUSTOM COLORS!

Also available as full custom systems!

ONLY MONARCH CAN DELIVER ALL THIS WITH YOUR UPGRADE!
Nero 7 Ultra Edition, Livestrong Wristband, Half-life 2 & a FREE GIFT!
Along with the best parts, prices, service and support in the industry!

Copyrighted material

XFX
SEE IT·HEAR IT·FEEL IT

Check out these amazing deals on graphics cards from Monarch and XFX!

190390
XFX GeForce 6600 LE
256 MB DDR3
PCI-E/HDTV-Out/DVI
(Lite Retail Box)
$95.00

190339
XFX GeForce 7800 GT
256MB DDR3/PCI-E/TV-Out
DUAL-DVI (Retail Box)
$325.99

190377
XFX GeForce 7800 GTX
256MB DDR3/PCI-E/TV-Out
DUAL-DVI (Retail Box)
$467.99

190337
XFX GeForce 7800 GTX
Overclocked 256MB DDR3
PCI-E/TV-Out/DUAL-DVI
(Retail Box)
$495.00

190439
XFX GeForce 6600 GT
128 MB DDR3
PCI-E/TV-Out
DVI (Retail Box)
$139.69

190445
XFX GeForce 6800 GS
XXX Edition
256MB DDR3/PCI-E
HDTV-Out/Dual-DVI
(Lite Retail)
$208.69

AN XFX EXCLUSIVE

Protect your investment with XFX's Double Lifetime Warranty! - See our website for details!

Monarch Nemesis™ Custom Gaming Desktop

Keyboard, monitor, and speakers available seperately - see website for all accessories.

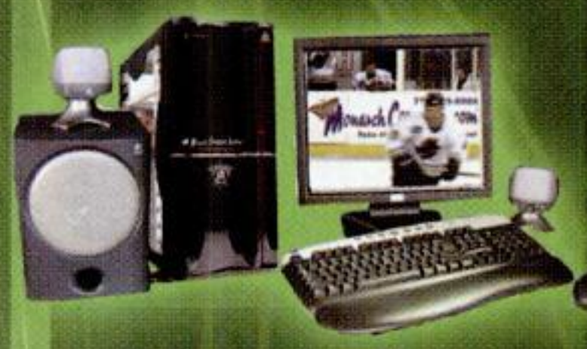
Dominate the competition with your dream rig!

Ask for Part #: 80502
AVAILABLE COMPONENTS:
Choice of Case and Power Supply
Choice of name-brand Motherboard
Choice of AMD Athlon™ 64/FX/X2
- includes heatsink and fan
Choice of name-brand memory
Up to 3 name-brand Hard Drives,with optional RAID setup (1 or 0)
Up to 2 name-brand Optical Drives from CD-ROM upto Dual-Layer DVD Writes
Choice of Floppy Drive
Choice of NVIDIA GeForce Graphics Card
Choice of name-brand sound card
Network options from modem to wireless
Choice of OS including Microsoft Windows XP Home, Professional, and Media Center
Industry Standard Upgradable
Full line of peripherals and accessories
1 or 3 year warranties available
24/7 on-site service available

Starting @ ONLY **$439!**

Monarch Nemesis™ Value Gaming Desktop Special (PCI-E)

Ask for Part #: 90594



Keyboard, monitor, and speakers available seperately - see website for all accessories.

SELECTED COMPONENTS:
Antec Sonata II Piano Black Quiet Mid Tower w/Window w/450W Power Supply (Black)
DFI NF4 SLI Infinity Audio/GB-LAN/IEEE-1394 PCI-E/SATA3G
AMD Athlon™ 64 3500+ 512K 90nm (939)
AMD Certified Heat Sink Fan
1 GB (2 pcs 512) DDR (400) PC-3200 Corsair (VS1GBKIT400)
Western Digital Caviar SE 160 GB SATA3G 8MB Cache 7200 RPM (WD1600JS)
NEC ND-3550A 16X Dual Layer DVD±RW
GeForce 6800 GS 256MB GDDR3 PCI-E/HDTV-Out/DVI
Choice of Microsoft Windows Operating System
Industry Standard Upgradable
USB Ports on front of case
1 or 3 year warranties available
24/7 on-site service available

SPECIAL OFFER!
$50 OFF! - Was ~~$909~~ - Now $859!

Monarch Furia™ Custom Workstation w/SLI

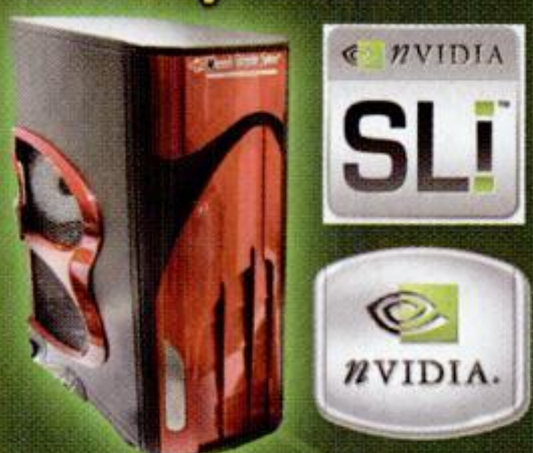
Keyboard, monitor, and speakers available seperately - see website for all accessories.

Work Smarter and Faster with this Powerful workstation!

Ask for Part #: 80391
AVAILABLE COMPONENTS:
Choice of Case and Power Supply
Choice of name-brand Motherboard
Choice of AMD Athlon™ 64/FX/X2 or
NEW AMD Opteron™ 100 Series 939!
- includes heatsink and fan
Choice of name-brand memory
Up to 3 name-brand Hard Drives,with optional RAID setup (1 or 0)
Up to 2 name-brand Optical Drives from CD-ROM upto Dual-Layer DVD Writes
Choice of Floppy Drive
Choice of Up to 2 NVIDIA graphics cards in SLI configuraton
Choice of name-brand sound card
Network options from modem to wireless
Choice of OS including Microsoft Windows XP Home, Professional, and Media Center
Industry Standard Upgradable
Full line of peripherals and accessories
1 or 3 year warranties available
24/7 on-site service available

Starting @ ONLY **$577!**

Monarch Nemesis™ Custom Gaming Desktop w/SLI



Keyboard, monitor, and speakers available seperately

Don't settle for less than the ABSOLUTE BEST!

Ask for part #: 80502
SELECTED COMPONENTS:
Thermaltake Shark Full Tower w/FirePearl Custom Paint
PC Power & Cooling SLI 510W ATX 2.01 Power Supply
Asus A8N32-SLI Deluxe nForce4 SLI
AMD Athlon™ 64 FX-60 CPU
2 GB (2 pcs 1GB) DDR (400) PC-3200 OCZ Dual-Channel (OCZ4002048PFDC-K)
1 x WD 74 GB SATA HDD
2 x WD Caviar SE 250 GB SATA3G w/RAID 0 Setup
2 x Plextor PX-716SAL DVD±RW
Mitsumi Floppy 7-in-1 Flash Reader
2 x NVIDIA GeForce 7800 GTX 512MB GDDR3 PCI-E, TV-Out, Dual-DVI
Creative Labs X-Fi Elite Pro
D-Link DWL-AG530 Tri-Mode Dualband Adapter
Microsoft Windows XP Pro (SP2)

9
MAXIMUM PC KICKASS
Sept. '05

$4995!

Take the Monarch Challenge:
Give us 5 minutes and Save $100s if not $1000s!

Create & Save Quick Quotes! Lock-in pricing for up to 7 days!

MonarchComputer.com™

ONLY MONARCH CAN DELIVER ALL THIS WITH YOUR UPGRADE!
Nero 7 Ultra, Livestrong Wristband, Half-Life 2 and choice of FREE GIFT - Along with the best parts, prices, service and support in the industry!

nero 7 ULTRA EDITION

FREE GIFT!

Copyrighted material

BEFORE

RESTORE AND PRESERVE YOUR PHOTOS

BY TOM R. HALFHILL

BEFORE

Copyrighted material

RE
RVE

AFTER

When a hurricane, forest fire, or other disaster threatens a home, what's the first thing most people try to save? Their family photo album. It's vital to any family's history—and unlike nearly everything else in a household, it's irreplaceable.

Unfortunately, most families have more photographs than they realize, and those photos are rarely gathered in one place. The oldest photos may be fading away or suffering damage from mold, fungus, and airborne pollutants. Without preservation, those photos will be lost forever.

Now there's hope. Using a computer and a scanner, you can preserve your most valuable photos in digital form, earning the gratitude of your family and future generations. You might even create an archive of historical significance.

We'll show you how to scan, restore, and preserve your photographic prints, slides, and negatives. The same techniques apply to other materials, such as birth, death, and marriage certificates; property deeds; obituaries and news clippings; handwritten records in family bibles; and other old documents. By archiving and distributing these valuables on CDs or DVDs, you can share your history with your extended family and ensure that at least one copy will always survive, no matter what misfortune befalls the originals.

AFTER

Copyrighted material

RESTORE AND PRESERVE YOUR PHOTOS

Scanning Photographic Negatives and Slides

Scanning is the most important part of a photo-preservation project. It's usually the most time-consuming part, especially if you're preserving numerous photos. Some people compare it to mowing a lawn with scissors. Getting a good scan is also critical to the quality of your final images, because even the best *Photoshop* expert can't hide the shortcomings of a poor scan.

Because scanning is both a science and an art, your skill will improve with experience. For that reason, I recommend starting a large project by scanning a few dozen less-important and less-deteriorated photos first. If you start with the most interesting and difficult-to-fix photos, you'll want to rescan them later when your skills improve.

Make a concerted effort to find original negatives. Negatives and slides almost always scan better than second-generation prints made from those films. Unfortunately, many of our ancestors didn't save their negatives, or hid them away where they will never be found. My own scanning project began with the discovery of a thousand box-camera negatives in my late maternal grandmother's attic—pictures she took from about 1914 to the 1960s. Most are in excellent condition, and they have produced much better scans than the poorly made and badly faded contemporary prints that survive from those negatives.

Carefully store and handle any film made before the 1950s, which may have a cellulose nitrate base. Over time, nitrate film becomes chemically unstable and highly flammable, especially if large amounts are kept in airtight containers and stored at high temperatures (such as attics in hot weather). Under some conditions, nitrate film is spontaneously combustible. That's right, it blows up! To be safe, don't leave old negatives or slides in the scanner longer than necessary, especially if your scanner doesn't use a cold-cathode light source.

After about 1950, film manufacturers abandoned cellulose nitrate in favor of a triacetate base known as safety film. Sometimes the edge markings clearly say "safety film." Safety film isn't flammable like nitrate film, but it suffers from another chemical instability. If you find old negatives with a strong acid odor, it's evidence of "vinegar syndrome"—chemical breakdown of the triacetate film base. Another symptom is a shrinking film base, sometimes to the point where the film emulsion cracks like dried mud. Do your best to scan those negatives immediately and keep them apart from others that don't smell bad. The chemical process of vinegar syndrome is autocatalytic, which means the deterioration feeds on itself, and the acid fumes can trigger the reaction in other negatives sharing a similar film base. There's no known cure for vinegar syndrome, although freezer storage can slow the breakdown.

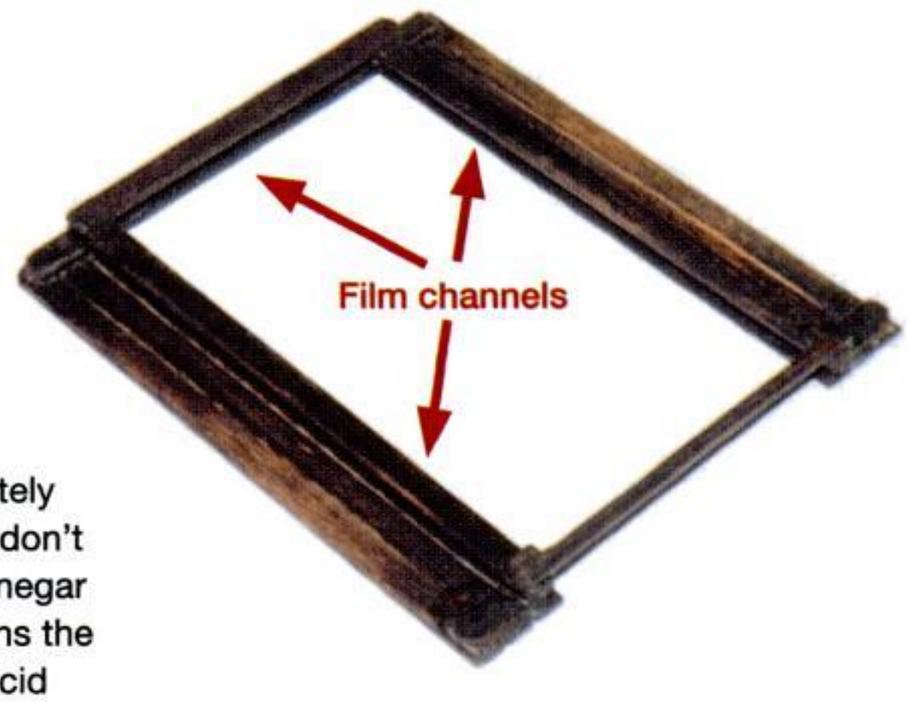
Yet another problem you may encounter with old negatives is oddball film sizes. My grandmother's box camera used 116-format roll film, which Kodak introduced in 1899 and discontinued in 1984. The negatives are 2.5 inches wide and 4.25 inches long. They're too big for the medium-format film holders included with today's scanners, which are designed for 2.25-inch-wide 120- or 620-format roll film. With a little ingenuity, you can make your own film holders for oddball sizes out of black cardboard. Anything that holds the negative flat and slightly above the flatbed glass will work (see photo).

Today's scanners have a maximum optical resolution of 2400 dots per inch (dpi) or more, but that doesn't mean you should scan everything at maximum resolution. Scanning at a high resolution is great, but the higher the resolution you use, the longer the scan will take, and the larger the file size will be. Doubling the linear scanning resolution (from, say, 300 dpi to 600 dpi) roughly doubles the scanning time and quadruples the file size. Scanning medium- and large-format negatives at high resolutions will produce gigantic image files, perhaps too large for your computer to handle. Color image files are three times larger than black-and-white image files, because the color image contains three times as much data per pixel in the RGB channels. Your storage requirements can quickly get out of hand if you don't choose the resolution carefully.

You should scan negatives at higher resolutions than you would scan prints of equal size, because negatives produce higher-quality enlargements. Your resolution target should be 300 dpi at the largest print size anyone is likely to make. For example, let's say you're scanning a 2.25-inch-square negative (a common size from the 1950s and '60s) and want to allow prints up to 12x12 inches. That's a 5.3x enlargement (12 divided by 2.25 equals 5.3), so you should scan the negative at 1600 pixels per inch (5.3 times 300 equals 1590, then round upward to 1600).

A smart approach is to match the scanning resolution to the quality of the negative. Pictures taken with cheap box cameras start looking mighty fuzzy beyond 2x enlargements—no matter how high a resolution you use during the scan—because the camera had a crappy single-element uncoated lens, and the spring-driven shutter was too slow for sharp exposures. Scanning those negatives for anything beyond a 3x or 4x enlargement is overkill. If a 2.5-inch-square negative was made with a box camera, scanning at 1200 dpi should be plenty. That's enough for a 4x enlargement of 9x9 inches (4 times 2.5 equals 9). The cheap camera lens will make greater enlargements look intolerably blurry, long before you notice any pixelation due to inadequate scanning resolution.

On the other hand, the same-size neg-



Obsolete film sizes may not fit the standard film holders included with scanners. You can make custom holders out of black cardboard. Because I needed to scan a thousand ancient 116-format negatives, I constructed a sturdier film holder using wooden sticks from frozen veggie corn dogs.

Copyrighted material

ative made with a top-quality old camera (such as a Rolleiflex) can be needle-sharp and permit huge enlargements. Scanning at 1600 dpi or even 2400 dpi isn't too much—if your computer has enough RAM to handle such a large image file. Storing large images shouldn't be a deterrent, because the price of disk space is negligible—between $0.50 and $0.60 per GB.

Store old negatives and slides in archival plastic pages. Your scans may not be the last word. Some of your descendants might think they can make better scans with more advanced technology. Let them try!

Scanning Prints

Unless your ancestors were pack rats like my grandmother—who squirreled away a thousand box-camera negatives in her attic—you'll need to do some work from prints, not from original negatives. Although negatives almost always yield better scans than prints, it's possible to make scans of prints that improve on the originals.

Your minimum resolution for scanning any reflective materials should be 300 dpi, selectable in the scanner software. For original prints smaller than 8x10 inches, I recommend scanning at 600 dpi, because it allows you to enlarge the image at least 2x without pixelation. Scanning prints at resolutions higher than 600 dpi won't reveal more photographic detail. It's necessary only if you plan to make big enlargements and don't care if the images look blurry.

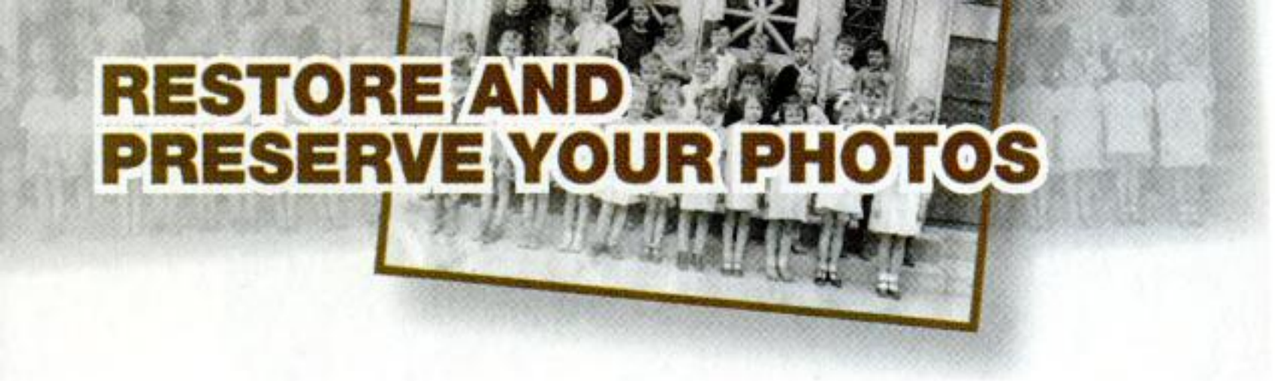
For important text documents, especially handwritten ones, scanning at 600 dpi often allows better reproduction without a hint of pixel staircasing. Although 600 dpi scans take longer and require four times as much disk space as 300 dpi scans, it's rarely a problem unless you have thousands of pages to save.

Be sure the scanner's flatbed glass and the print are clean before scanning. But don't make any aggressive attempts to clean an old print—you might cause irreversible damage. In particular, resist the urge to repair a torn print with tape. Unless you have archival-grade preservation materials, the tape will turn yellow over time and leave sticky residue. It's better to repair a torn image in *Photoshop*. Likewise, scan a previously taped print without trying to remove the tape, or else you might peel off some of the image.

Sepia toning was popular in black-and-white photofinishing before the 1950s. To preserve the original tone, you must carefully adjust your scanner software to scan the image as a color photo. The resulting file will be about three times larger than a monochrome scan. Some people prefer to scan in monochrome, then add sepia toning with image-editing software when making copy prints (as was done here).

Kodak's *Digital ROC* software can work wonders on faded colors. The original version of this picture, taken in 1957, is typical of old color photos—the blue dye layer faded much faster than the red layer, leaving behind a strong reddish cast. *Digital ROC* automatically produced the corrected version. Some scanner software includes *Digital ROC*. If yours doesn't, you can download the app from Kodak as a *Photoshop*-compatible plugin. The regular version costs $50 and a more sophisticated pro version is $100.

Copyrighted material



RESTORE AND PRESERVE YOUR PHOTOS

Many old black-and-white prints are sepia toned (light brown). Some people prefer to scan them in color to preserve their original appearance. However, color scanning requires careful adjustment to accurately reproduce the tone, and the images take longer to scan and occupy about three times as much disk space as a monochrome file. I prefer to scan sepia prints as monochrome images (see photos on previous page). If I make a copy print, it's easy to convert the monochrome image to RGB mode and apply sepia toning in *Photoshop* without altering the original file.

Some color prints are badly faded. I have seen horribly faded color prints made as recently as the 1980s, especially if they were exposed to light. Color images don't last as long as black-and-white images do, because color dyes aren't as stable as the silver halide emulsions of black-and-white materials. Dye layers tend to fade at different rates, producing a strong color cast that's very difficult to manually correct with image-editing software. Some image editors and scanner drivers have optional color-restoration filters that work more or less automatically, with varying degrees of success.

In my experience, the best and easiest color-correction software is Kodak's *Digital ROC* (Restoration of Color). Often it works miracles on faded colors (see the before and after photos on the previous page). A wise precaution—though it chews up twice as much disk space—is to save the uncorrected original image along with the corrected version. That way, future preservationists can use any superior color-restoration software invented in the years to come.

When scanning prints, don't forget to check the reverse side. You might find a handwritten caption or printed information from the commercial photofinisher that helps you pin down the photo's date and location. One of the most frustrating things about a family-history project is finding pictures of people and places you can't identify. In some cases, I have scanned the handwritten notes on the backs of old prints, in addition to recording the information in a text file. The handwriting sample might be a clue to identifying the photographer, and hence the subject.

Restoring Scans of Old Photographs

Inevitably, some family photographs you scan will be in dreadful condition. The oldest photos may be torn, spotted, and badly faded. Even some photos just 20 or 30 years old may have weirdly distorted colors. It's almost impossible to resist the temptation to repair the scanned images with an image editor such as Adobe *Photoshop*.

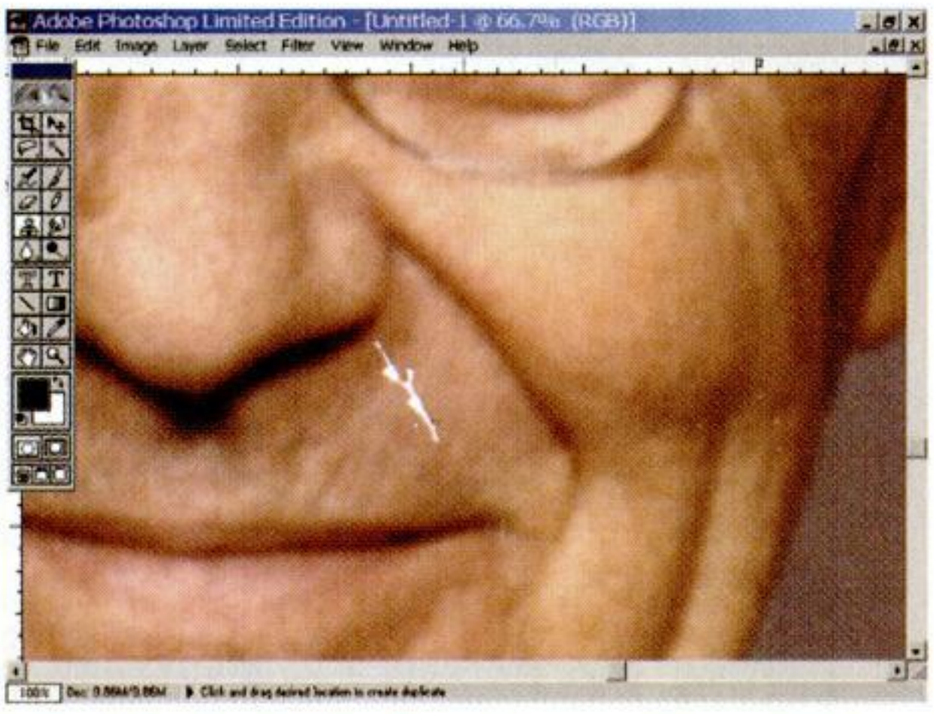
Historians, archivists, and strict preservationists generally prefer to leave old images alone. Attempts to fix defects might eliminate original details or substitute false realities. However, some photos are in such poor condition that they demand attention. A good compromise is to keep the original scan unretouched while altering a copy of the file. This allows future generations to examine the original image and use more-advanced restoration tools that haven't been invented yet.

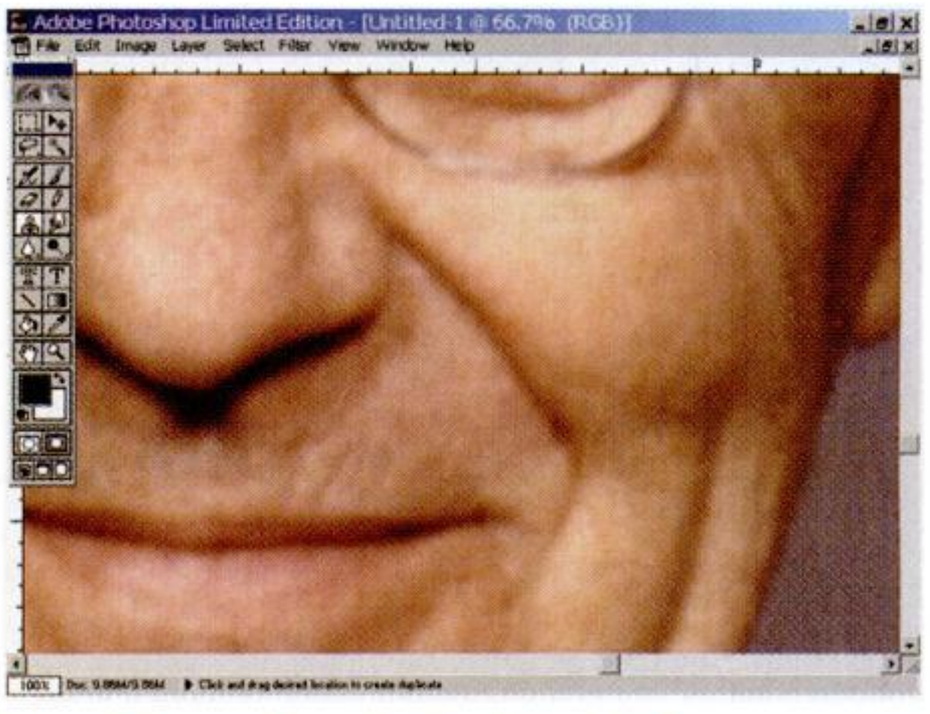
Some scanners have a feature called Digital ICE, which compares an infrared scan of the image with the visible image to automatically fix defects. Digital ICE can save you a great deal of manual retouching. However, it significantly lengthens the scanning time and requires lots of computer memory. Also, it doesn't work on prints, Kodachrome slides, or conventional black-and-white negatives, because the emulsions of those materials aren't compatible with the infrared scan. Digital ICE works only with non-Kodachrome slide films (such as Ektachrome) and recent dye-based black-and-white films. So even if your scanner has Digital ICE, manual retouching is unavoidable.

Your best friend for manually fixing dust spots, scratches, and other surface defects is *Photoshop's* clone tool (the rubber-stamp icon in the standard tool palette), or its equivalent in other image-editing programs. The clone tool copies pixels from one area of the image to another. To fix a dust spot, for example, you copy pixels from a clean area of the image that matches the area you want to retouch. For small spots, use a small soft-edge brush and work carefully with the image magnified at 100 percent on your screen (see the before and after photos below). A complete *Photoshop* tutorial is beyond the scope of this article, but you can find many hints and tips elsewhere.

Another valuable restoration aid is the histogram, which is affected by the exposure controls in the scanning software and the levels control in *Photoshop*. Often you'll need to stretch the histogram to expand the dynamic range of faded or low-contrast photographs. Almost all old black-and-white images need this treatment. Usually I adjust the histogram using the scanner software, then make any further tweaks in *Photoshop*. For extreme corrections of badly faded images, sometimes it's better to use image-editing soft-

Continued on page 44➔





Photoshop's clone tool requires a little practice but quickly fixes dust spots and other surface defects. With this image, I cloned some nearby pixels onto the nasty scratch, obliterating it completely. Long hairline scratches are harder to fix without leaving an obvious trail of cloned pixels. Instead of dragging the clone tool across the scratches, use a series of mouse clicks to fix the scratch in small sections.

Copyrighted material

OFFICIAL MEMORY OF THE MAXIMUMPC 2005 DREAM MACHINE

Performance

WHY CORSAIR IS

THE WORLD'S MOST AWARDED MEMORY

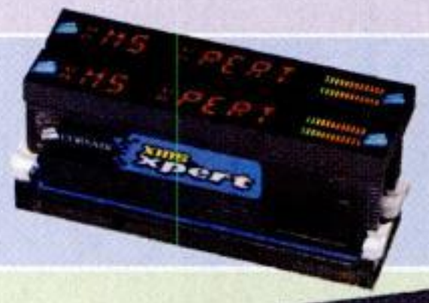
CORSAIR™

Innovation
Performance
Reliability

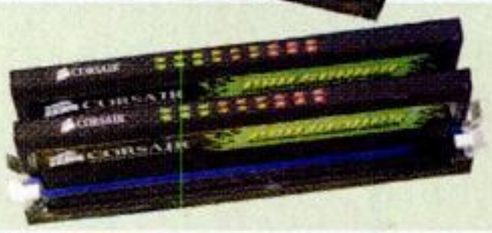
www.corsairmemory.com

Need more *octane* for gaming or digital media? Upgrade your memory and see an immediate performance difference! Corsair offers the world's fastest memory in an extensive range of high-density **1GB** and **2GB** modules. Choose DDR1 or DDR2, and find solutions for Intel and AMD processors. Of course, every module features the legendary quality that has made Corsair the world's most awarded memory.

XMS2 DDR2: WORLD SPEED LEADER
1GB and 2GB solutions for all Intel performance motherboards.



XMS & XMS2 XPERT
1GB and 2GB solutions. Features the world's first parametric LED display.



XMS & XMS2 PRO
1GB and 2GB modules. World's most popular activity-indicating LED solution.

XMS
1GB and 2GB modules in classic XMS packaging. The DDR1 speed leader.

VALUE SELECT
1GB and 2GB value solutions for standard desktops and notebooks.

ORDER FROM THESE OFFICIAL CORSAIR RETAILERS

BEST BUY · Fry's Electronics · MICRO CENTER The Ultimate Computer Store · Monarch Computer.com "We have what you're looking for!" · newegg.com · TigerDirect.com · ZipZoomfly.com

Copyrighted material

RESTORE AND PRESERVE YOUR PHOTOS

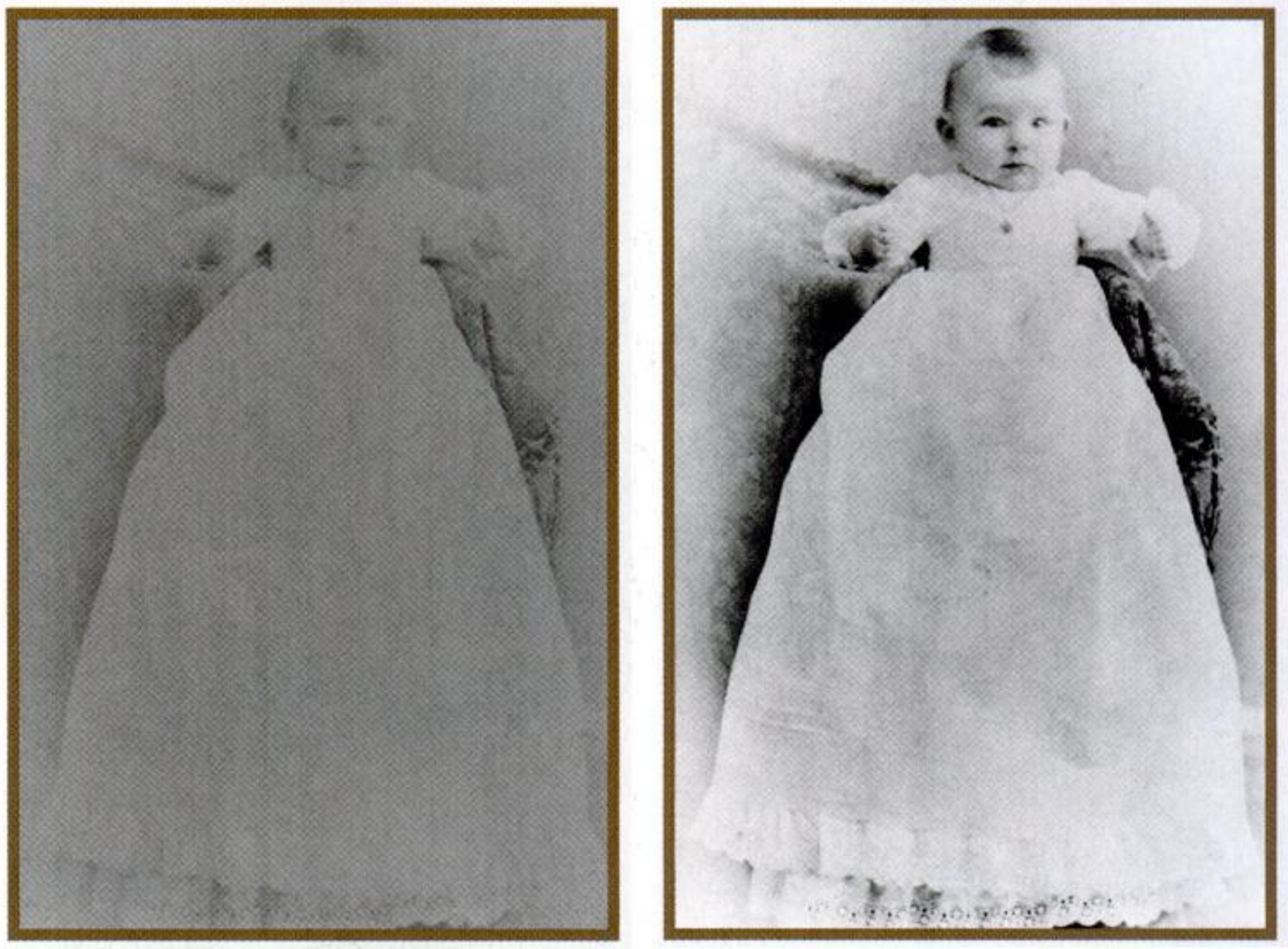
Continued from page 42

ware for all histogram adjustments (see the before and after photos on this page).

When using an image editor for major histogram adjustments, you must scan the image at a bit depth exceeding eight bits per channel. Otherwise, your image may suffer the dreaded "picket-fence effect"—abrupt tone transitions visible as narrow gaps in the histogram after stretching it out. By scanning the image at 12, 14, or 16 bits per channel, you can make radical changes to the histogram without leaving those gaps. Then convert the corrected image to eight bits per channel before saving. If you apply your major histogram corrections with the scanner software before scanning, you can safely use eight bits per channel. Scanners usually have 12 to 16 bits of internal dynamic range and will distribute the extra levels uniformly across the eight-bit range.

One tool to shun like poison is image sharpening—including the type known as "unsharp mask." Don't use it, either in your scanner software or your image-editing program. Although virtually all scanned images need sharpening, the amount varies according to the image resolution and output size. An image properly sharpened

Continued on page 46



Here are before and after versions of a badly faded black-and-white photograph of my grandfather on the day of his baptism in 1897. The original photo is vanishing fast. I scanned it as a 16-bit monochrome image and used *Photoshop's* levels control to expand the dynamic range across the full width of the histogram. I also used *Photoshop's* curves control to boost the contrast.

CHOOSING A SCANNER

If you don't already have a flatbed scanner, don't agonize over which one to buy. These days, they're all pretty good. If almost everything you want to scan is reflective material—photographic prints and paper documents—any flatbed scanner will do. Even the cheapest models have more resolution than you need.

To scan negatives or slides, your choice becomes more critical. Making the best scans of 35mm and medium-format roll film requires a dedicated film scanner. Flatbed scanners with transparency lids and film adapters still can't match the sharpness of dedicated film scanners, no matter their claimed resolution. For various reasons, a film scanner with 2400 dpi resolution almost always outperforms a flatbed scanner with 4800 dpi resolution.

Unfortunately, good film scanners—especially medium-format scanners—cost much more than flatbeds and are more difficult to use. If you can't afford a dedicated film scanner right now, you can postpone that part of the project or settle for a good flatbed. While they're not ideal, the latest flatbeds with film adapters have improved and are sufficient for scanning most medium-format films, especially roll films exposed in box cameras that were popular decades ago. Those images are so fuzzy that using a better scanner won't matter. The latest flatbeds with transparency lids are sufficient for scanning 35mm negatives and slides if you don't anticipate making prints larger than 8x10 inches.

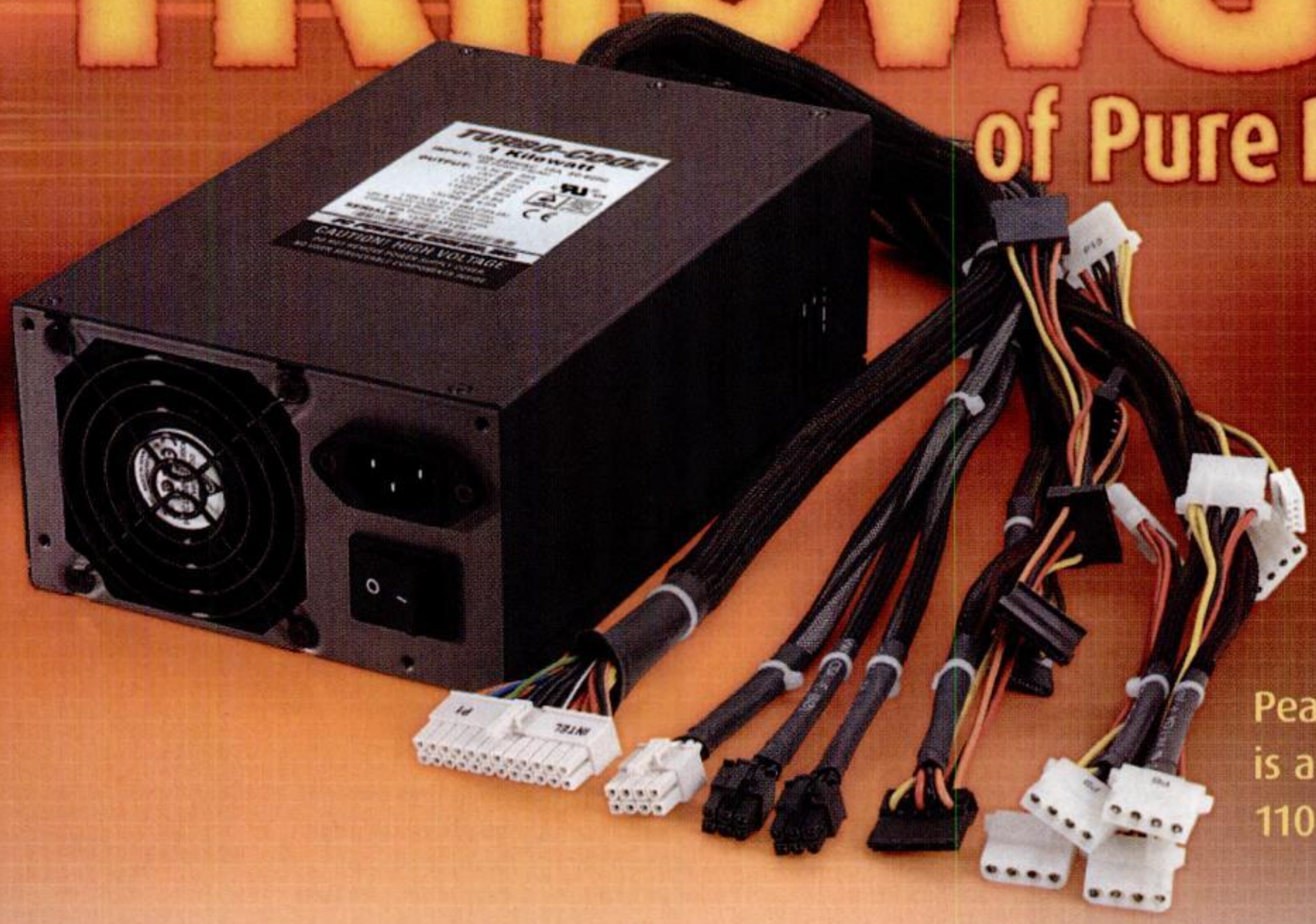
Most people need to scan at least some negatives and slides in addition to reflective materials. Original negatives and slides almost always yield better scans than prints from the same source will. The original film has more dynamic range (tonal variation from light to dark) and may have faded less than the prints have, especially if the prints were exposed to light. Therefore, when you purchase a scanner, make sure it comes with adapters for various film sizes, whether it's a film scanner or a flatbed with transparency hood. Common film sizes you will encounter are 35mm, 120 (2.25 inches wide), 620 (same width as 120), and 4x5 inches. Be sure the scanner includes film holders for all of those sizes.

A good flatbed with film-scanning capability costs $300 to $600. If that's too much right now, buy a cheaper model and start scanning the prints that you don't have negatives for. If you are thorough, your scanning project may take years, so you can postpone the purchase of a more expensive scanner until later. The future scanner you buy will be even better than those available now, and prices keep falling.

Many film scanners and a few flatbeds have a feature called Digital ICE that automatically fixes some dust spots and scratches on scans made from negatives and slides. Digital ICE, however, greatly slows down the scanning process and requires a powerful computer with lots of memory. It doesn't work with Kodachrome slides or the vast majority of black-and-white negatives. It's so slow and resource-intensive that it's useful only for the most important and damaged color negatives. Of course, fixing defects with an image editor such as Adobe *Photoshop* takes time, too. My own photo-scanning project was so large (thousands of images) that I have decided to leave detailed dust-spotting to future generations. My contribution is to preserve the rapidly fading images.

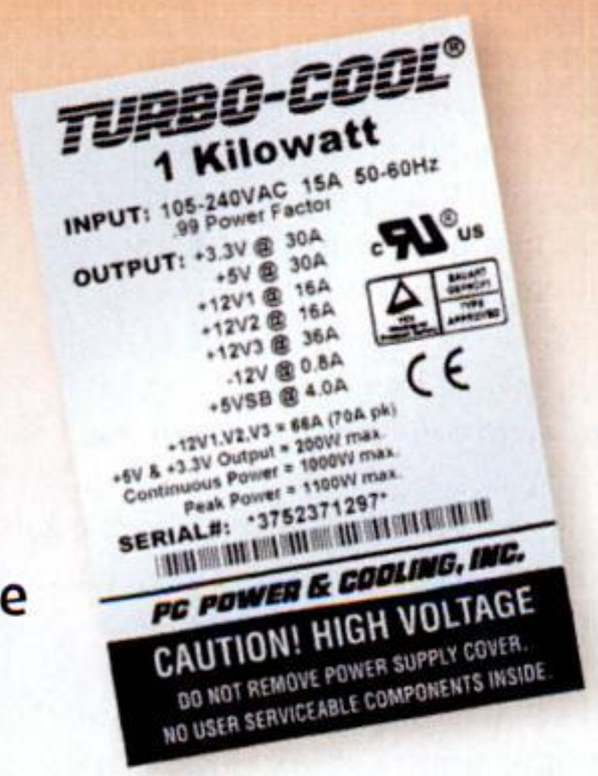
Copyrighted material

1Kilowatt of Pure Power!



Peak Power
is a Mind-Boggling
1100 Watts!

We built the Turbo-Cool®1KW the way we have since 1985— with uncompromised quality and conservative, honest power ratings. This technological marvel will be the last PSU you'll ever need!



Turbo-Cool®1KW's Next-Gen Specs:

- 1000W Continuous and 1100W Peak
- Fits Std. ATX Cases (20" min. depth)
- +12VDC Rails Total 66A (70A Peak)
- High Efficiency (85%) with .99 PFC
- Amazingly Quiet Cooling System
- Complete Array of Output Connectors
- EPS12V, SLI, and SSI Compatibility
- 5-Year Warranty; Unbeatable Support

Turbo-Cool 200 XT

1985

20 Years of Innovation

Turbo-Cool 1KW

2005

PC POWER & COOLING, INC.®

www.pcpowercooling.com • 5995 Avenida Encinas, Carlsbad, CA 92008 • (760) 931-5700 • (800) 722-6555

Specifications, and pricing available on website. SLI is a trademark of NVIDIA Corporation. Turbo-Cool and PC Power and Cooling are registered trademarks of PC Power & Cooling, Inc. ©2005

Copyrighted material

Continued from page 44

for making an 8x10 print might be severely oversharpened for making a 4x6 print. Remember that you can't remove sharpening from a saved image, and you can't foresee how your scanned images might be used in the future. In addition, future software will almost certainly have better sharpening technology. Therefore, you should scan and save all images unsharpened. If you want to make prints, sharpen a copy of the image.

Preserving Your Digital Archive

Before embarking on your scanning project, decide how you will back up and archive the image files. Scanning takes lots of time, and you don't want to lose all your work to a hard-disk failure or other tragedy.

CDs might seem like the most logical archive media, but their 680MB capacity is inadequate for all but the smallest scanning projects, unless you divide the project into sections. (My own project would currently fill 20 CDs.) A better alternative is DVDs, which hold 4.7GB per disc (single-layer).

DVDs take a while to burn, so for most interim backups, I installed a removable hard drive bay in my computer. It accepts a standard IDE hard drive plugged into an inexpensive holder that slides into the bay like a drawer. I bought two identical hard drives and swap them between backups, always keeping one drive at another location 35 miles away. This protects my project against any catastrophe that might cause the loss of my home computer.

Many people worry about how long their storage media, especially optical media, will last. Writable CDs and DVDs use phase-change technology—a laser encodes the binary ones and zeroes on the disc by altering a dye layer. Those dyes aren't as stable as the glass-mastered metal layers in read-only CD-ROMs and DVDs. Some people have reported failures of writable CDs and DVDs after only a few years of storage or a few hours exposure to intense sunlight.

There are three ways to increase the chances your optical discs will outlast you. One is to use write-once discs (CD-R, DVD-R, DVD+R) instead of rewritable discs (CD-RW, DVD-RW, DVD+RW). Write-once dyes are much more stable than the rewritable dyes. Another way is to buy reputable name-brand discs instead of cheap generic discs. But even that's uncertain, because the name-brand companies often change suppliers to squeeze out the lowest manufacturing cost, so quality can vary from batch to batch. The only nearly foolproof way to guarantee media longevity is to burn multiple copies of your finished project on discs of different brands. For instance, you might burn one copy of the project on Verbatim and another on Memorex. That spreads out the risk, because one brand (nobody knows which) is likely to outlast the other. For final copies of parts of my project, I pay a little more money to buy gold-layered discs from MAM-A or Delkin, which are supposed to be the most stable writable media available.

Another consideration is file format. The ideal choice for image files would be a broadly supported, industry-standard format that stores the data uncompressed (for easier file recovery in case of bit errors). Unfortunately, there isn't such an ideal file format. JPEG is the next-best choice. It's widespread on the Internet and is the default in almost all digital cameras, so it will probably be supported for as long as computers exist. To avoid ugly compression artifacts, save JPEG images at the highest-quality (lowest compression) setting. Also, don't repeatedly load and save the same file in JPEG format, because each save applies another round of compression, which multiplies the artifacts.

GIF format uses a lossless compression method that's theoretically better than JPEG's lossy compression, but GIF has two drawbacks. First, GIFs are usually larger than JPEGs, even when the same image is saved at the highest-quality JPEG level. With today's high-capacity storage media, that's a relatively minor consideration. The larger drawback is that GIF saves only eight bits of data per pixel, so it's suitable for only black-and-white photos, not for color. (JPEG saves 24 bits of data per pixel—eight bits per RGB channel—enough for full color.) My tests with pixel-analysis software show that top-quality JPEG files of black-and-white photos are virtually indistinguishable from GIF files.

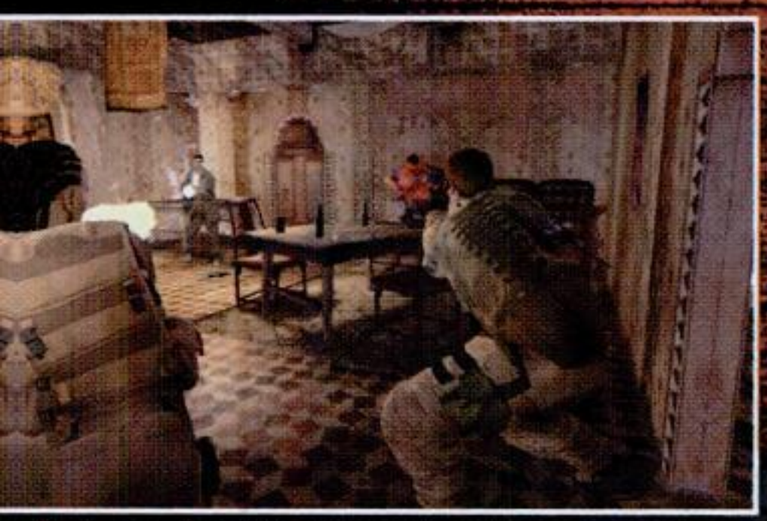
Final tip: If you plan to document your images with background information such as names, dates, places, and anecdotes (highly recommended), save those text files in plain-text ASCII format. Proprietary word-processor formats might not be readable in the future if the software isn't available. And always store the text files on the same media as the images—ideally, in the same directories, so they won't become separated in years to come. MPC

Scanning original negatives at high resolution can reveal fascinating details and clues, even if the photos were taken with cheap box cameras. The picture of my maternal grandmother was made in the 1920s, judging from her age, and was probably taken on a national holiday, because there's an American flag on the porch. Closer examination of the scanned image in *Photoshop* revealed a mysterious figure reflected in a hall mirror inside the house. After greatly enlarging the image, I recognized my grandmother's sister—crouched over the box camera, taking the picture!

Copyrighted material

CALL IT A FRIENDLY GATHERING...

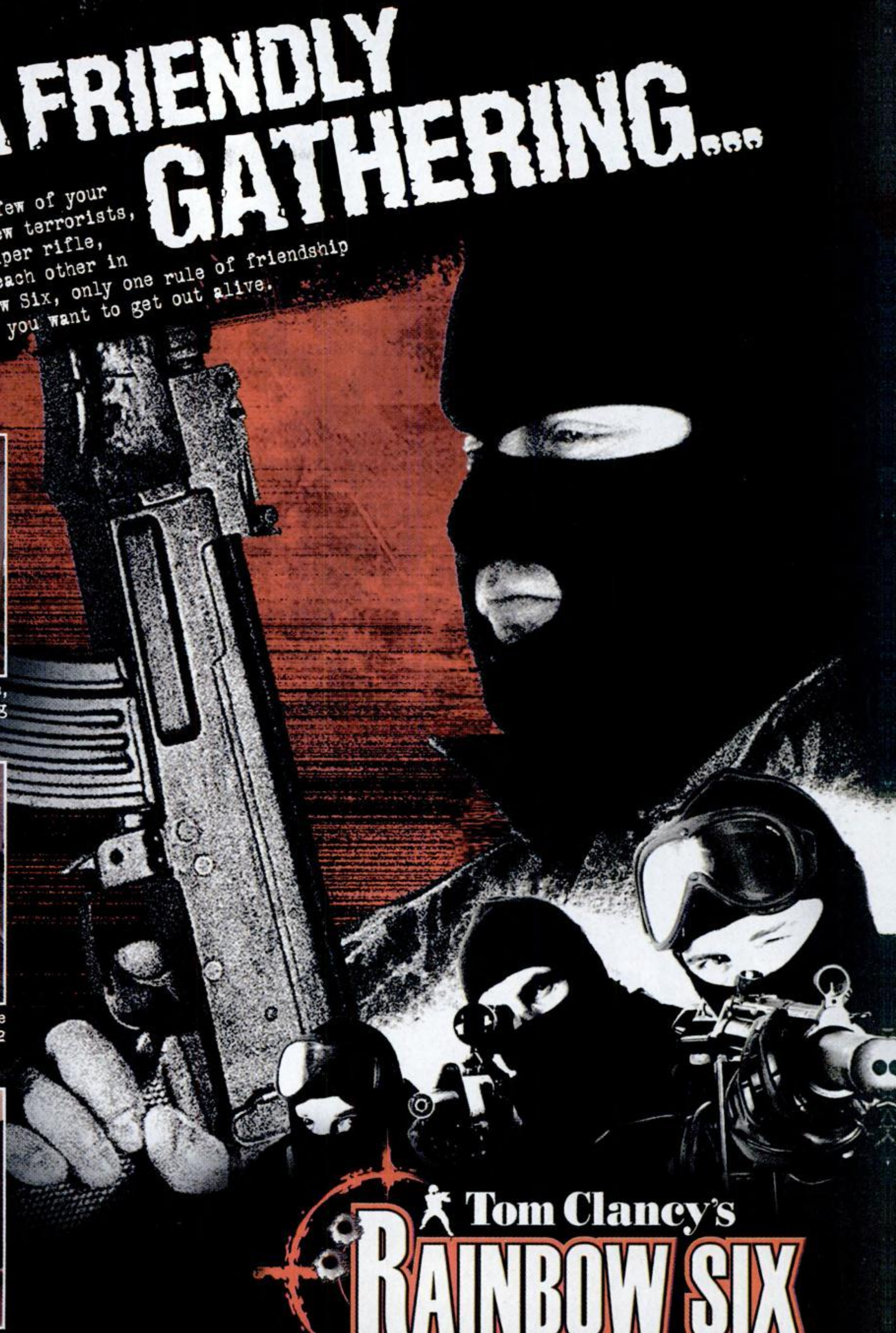
...a cheery online battle with a few of your closest pals. You hunt down a few terrorists, blow off some heads with your sniper rifle, and use night vision to stalk each other in the dark. In the world of Rainbow Six, only one rule of friendship applies: watch your back if you want to get out alive.



optimized for the PC with enhanced graphics, unnerving AI, and classic, pulse-pounding close-quarter battles.

featuring new cutting-edge technology like motion sensors, surveillance PDAs and 42 customizable weapons.

the total multiplayer experience, including signature Co-op and Deathmatch modes, plus the all-new "class-based" mode.



Tom Clancy's

RAINBOW SIX LOCKDOWN™

AMATURE 17+ Blood Language Violence

PC CD-ROM SOFTWARE

Red Storm

Play It On ubi.com™

RAINBOWSIXGAME.COM

UBISOFT®

S 2005 Red Storm Entertainment. All Rights Reserved. Rainbow Six, Rainbow Six Lockdown, Red Storm, and the Red Storm logo are trademarks of Red Storm ertertainment in the U.S. and/or other countries. Ubisoft, Ubi.com, the Soldier Icon, and the Ubisoft logo are trademarks of Ubisoft Entertainment in the U.S. and/or other uuuntries. Red Storm Entertainment, Inc. is a Ubisoft Entertainment company. Software platform logo TM and © IEMA 2003.

Copyrighted material

The World's First Modular Power Supply Just Got Better!

ULTRA X CONNECT™

Patent Pending

2

Slim Cable FLEXFORCE®

DR DUAL RAIL TECHNOLOGY

What is FlexForce?

Manageable
FlexForce Cables are designed to be easily routed and hidden within your case.

Increased Airflow
Special design allows air to travel 30% more effective then standard cables, increasing efficiency.

Design
Cables are dressed in a sleek looking titanium like finish.

What is Dual Rail Technology?

Better Power Distribution
The X-Connect distributes 12V power to the components that require it the most in odern PC's.

Dedicated CPU Rail -
Dedicated 12V Rail for the 2x2 Motherboard Connector

More stable power when you need it...

Available at: **www.ultraproducts.com/x2**

Fry's Outpost.com | MICRO CENTER The Ultimate Computer Store | TigerDirect.com | ZipZoomfly.com

Recover Your Deleted Files

Have you accidentally deleted pics off a media card or quick-formatted your drive, and you want to recover the contents? You may be able to recover your data with these handy tools

TIME 1 to 5 HOURS

We have this "friend," whom we'll call "Steve," who did something really, well, stupid. He accidentally deleted his entire archive of digital photos—more than 9GB of shots including 99.99 percent of all photos that existed of his twin 3-year-old daughters—by mistakenly quick-formatting the wrong drive in my, err, "his," PC. D'oh!

Steve naturally came to *Maximum PC* with his dilemma, and our data sleuths were on the case. A little tool called *Zero Assumption Recovery* solved the deleted-photo issue in short order. In just a few quick steps, and an hour's wait for the program to scan Steve's 300GB drive (which we installed as a secondary drive in another PC), we had his lost photos back! Not only did the scan find the pics, but it also managed to recover the original file names and folder structure—a feat several other similar programs couldn't match.

But what about all the other data on the drive? We wanted it *all* back. So we turned to the big guns: *GetDataBack for NTFS*, which worked exactly as advertised. Finally, we also investigated how to get deleted files off of removable media, such as CompactFlash and SD memory cards.

Thankfully, Steve only quick-formatted his drive, and he immediately stopped using it, so the data was still there to be discovered. Any of the following methods should help you too, should you ever find yourself in poor Steve's shoes.

BY STEVE **KLETT**

INGREDIENTS

- **ZERO ASSUMPTION RECOVERY**
  Free trial, www.z-a-recovery.com
- **GETDATABACK FOR NTFS**
  $100, www.runtime.org
- **MEDIARECOVER**
  $30, www.mediarecover.com
- **A SPARE HARD DRIVE OR PC**
- **LOTS OF TIME**

CAUTION!

If you accidentally delete data off of a drive, or need to recover data from a quick-formatted drive, immediately stop using the drive. Install it as a secondary drive in the original PC, or in a spare machine, and install and run all recovery software on an unaffected drive. Do not save or install anything to the drive you want to recover data from, or you could accidentally render your deleted files unrecoverable!

Recover Data from Your Hard Drive

GetDataBack for NTFS is the epitome of the adage "you get what you pay for." Several freeware programs, including even the free trial version of *GetDataBack for NTFS* itself, either didn't find a thing on our problem drive, or spit out just a laundry list of meaningless numbered files instead of our original file-structure.

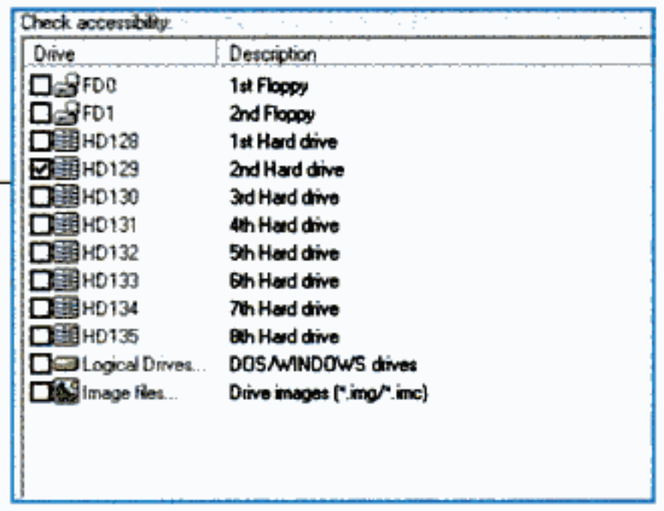
Enter the full registered version of *GDB for NTFS* ($100), and *presto*—not only did the application find *all* of our lost files, but it completely recovered the drive's original file structure and allowed us to recover everything, not just the digital photos we were initially hoping for!

Sure, $100 is a pretty big hit on the wallet, but when you consider that it can cost hundreds, even thousands, to have your data professionally recovered, it's money well spent (particularly when you add in the ability to perform the recovery yourself: Do you really want some stranger to see all those lost pics and "home movies" you want back?)

Here's how to use *GDB* to recover deleted or lost files on a working drive formatted with the NTFS file system. If your hard drive isn't detected by Windows, or can't be read, you'll probably have to send the drive to an expensive data-recovery specialist to recover your bits.

1 Determine the Correct Hard Drive

Unfortunately, the program does not list your drives in the same manner as Windows does, but with a little trial-and-error you should be able to determine the drive you want to scan. For example, if you want to scan your D drive, which is your secondary hard drive, select "2nd hard drive" and click Next.



2 Select the Proper Partition

Your next move is to select the partition you wish to scan, which in our case is the first partition (NTFS) listed in the Available Drives column. Click the partition name to highlight it, and then click Next.

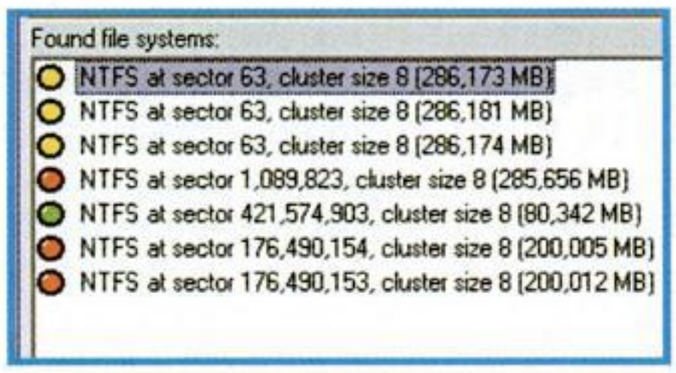
3 Select the Exhaustive Mode

While *GDB* gives you the option of selecting which specific sectors on your drive you'd like to scan, we doubt anyone is hardcore enough to record the specific drive sector on which your data is physically stored—we know we're not. So we'll have to scan the time-consuming way: Toggle the "Search entire drive" and "Excessive search" radio buttons and click Next. Excessive search means exactly what you'd think: It directs *GDB* to perform the most exhaustive search possible of every sector of your drive.

4 Now It's Time to Wait

Sit back and read *War and Peace* or catch up on some sleep—this is gonna take a while. We jest, but only partly; scanning our 300GB drive took an hour and a half.

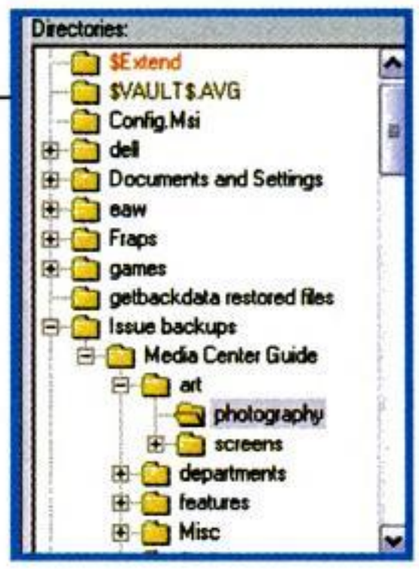
5 Choose the Files to Recover


Found file systems:
NTFS at sector 63, cluster size 8 [286,173 MB]
NTFS at sector 63, cluster size 8 [286,181 MB]
NTFS at sector 63, cluster size 8 [286,174 MB]
NTFS at sector 1,089,823, cluster size 8 [285,656 MB]
NTFS at sector 421,574,903, cluster size 8 [80,342 MB]
NTFS at sector 176,490,154, cluster size 8 [200,005 MB]
NTFS at sector 176,490,153, cluster size 8 [200,012 MB]

Once the scan is complete, you must select the file system you want displayed in a "recovery tree," which simply means you need to choose from the scan list what logical drive you want to see the contents of, and click Next. After a relatively brief 10- to 15-minute wait, *GDB* will build and display the file structure of the lost logical drive you selected.

6 Recover Your Files

Now, simply browse for the folder you want to recover just like you would in Windows Explorer. Right-click any folders or files you want to get back, and select Copy. *GDB* will save the folder (and all of its sub-folders) to a location of your choice. Rinse and repeat until you've recovered all of your files.



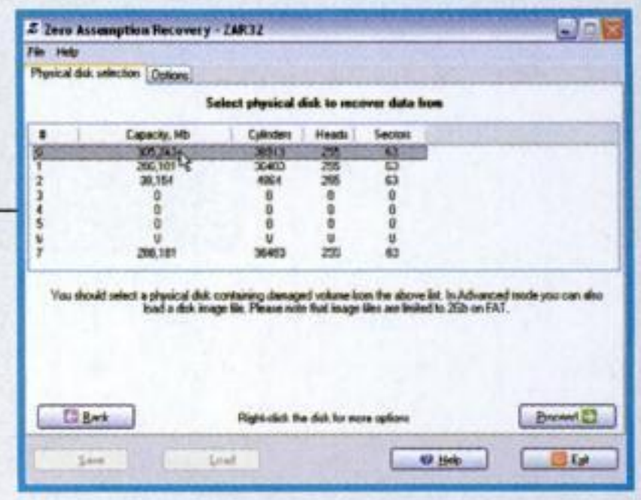
The Freeware Approach

You're in college and would rather spend your money on Milwaukee's Best and pizza than fancy-pants data-recovery software: We've been there. You're not out of luck, as there are some decent free options out there, such as the free trial version of *Zero Assumption Recovery*. This slick little program will not only recover deleted images, but many other file types. Here's how to use *ZAR* to get your data back.

1 Optimize Your System

Fire up the program—you can probably leave the default settings alone. If you have more than 1GB of system memory, however, select the Options tab and "Faster method" from the "Volume parameters analysis" pull-down menu. Go back to Preliminary Setup and click the Proceed button.

2 Select the Hard Drive to Scan

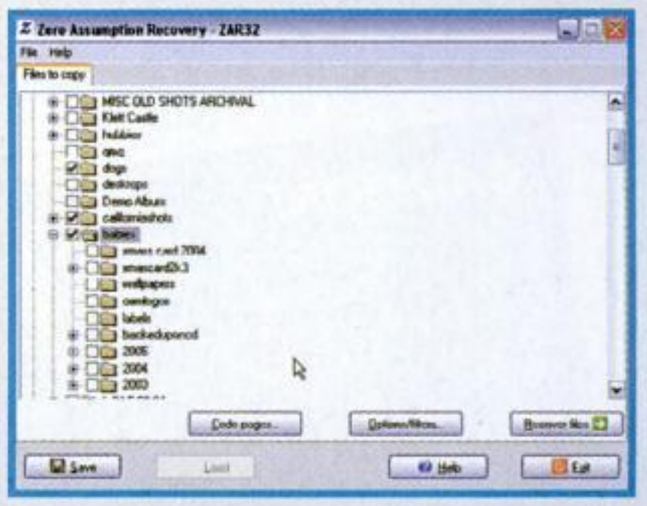

Zero Assumption Recovery - ZAR32
File Help
Physical disk selection
Options
Select physical disk to recover data from
Capacity, Mb
Cylinders
Heads
Sectors
You should select a physical disk containing damaged volume from the above list. In Advanced mode you can also load a disk image file. Please note that image files are limited to 2Gb on FAT.
Back
Right-click the disk for more options
Proceed
Save
Load
Help
Exit

Now, select the drive you want to scan for lost files by clicking it; select Proceed. Next, select the partition on the drive you want to search and click Proceed again.

3 Wait for the Scan to Finish

Sit back and wait for the program to scan your drive, which might take a long time, depending on the size of the partition you selected. Our 300GB drive took an hour and 15 minutes.

4 Recover Your Files



Whoop! If the stars are aligned in your favor you will be rewarded with your old folder structure, which you can navigate to locate and restore your files. Note: The trial version allows only four folders to be recovered per scan, so you might need to repeat this procedure multiple times—or pony up the $100 for the full version.

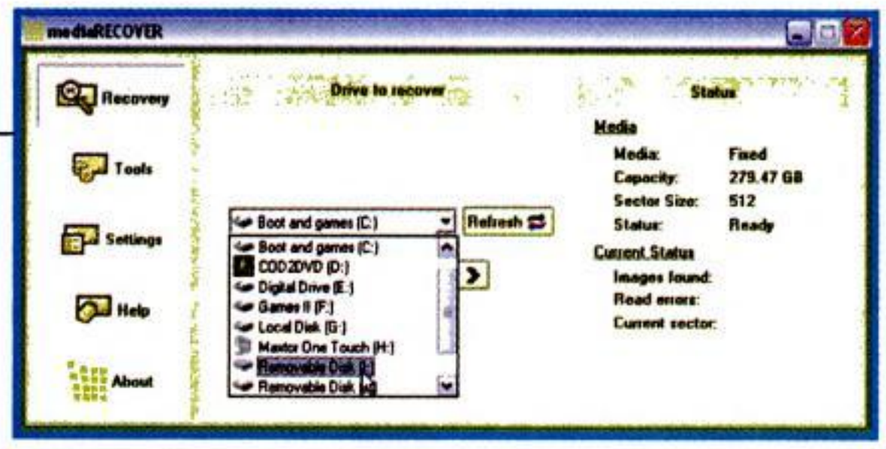
Copyrighted material

Recover Data from Portable Media

If you accidentally delete photos from one of the memory cards you use in your digital camera, such as a CompactFlash or SD and you want them back—it's no problem. There are several utilities, including several freeware programs such as *ZAR*, that will do the trick.

However, when it comes to preserving precious memories, we recommend you don't skimp: Slap down $30 on *MediaRecover*, which is designed from the ground up to rescue lost media files from hard drives and media cards of all types, including SmartMedia, Compact Flash, Memory Stick, Secure Digital, xD Picture Card, Microdrives, and MultiMedia Card. It does a good job, it's relatively fast, and it's a snap to use. We deleted a few dozen photos off a 1GB CF card and used *MR* to get 'em back—in less than 30 minutes, from start to finish.

1 Identify Your Drive

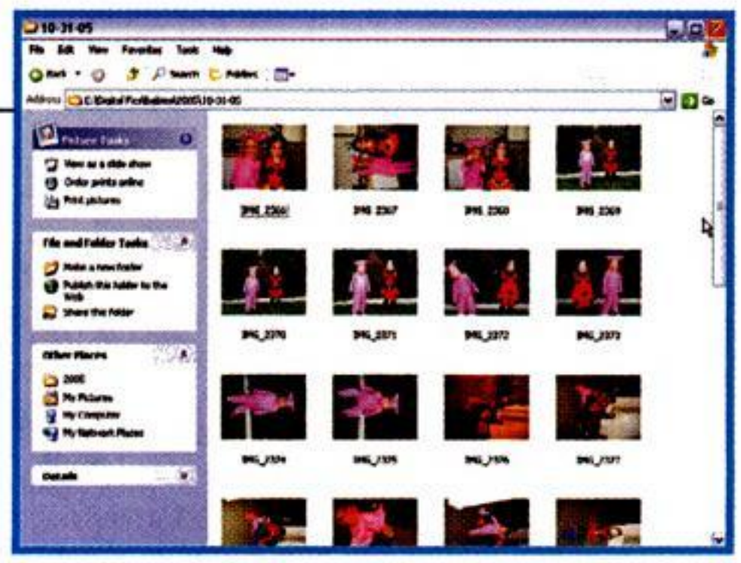


Insert the CF card into your PC's media reader and select the appropriate removable media drive letter to scan. Click Next, and then select a folder where you want recovered files to be saved. Click Next, then Start, and then select a Scan method (we choose Quick Scan because we're just after deleted photos)—leaving everything else at the default settings—and click Continue.

2 Select the Images to Recover

The scan commences and a window pops up that displays thumbnails of recovered images. When the scan is complete you just need to choose which images you want to save, and select Save Images. The preview window will close and bring you back to the root menu.

3 Save Your Files



The pay-off: Now, simply hit the "Open recovered files" folder and you're done—*MR* opens the folder in Explorer—in Thumbnails view no less—and you can go to sleep knowing your pics are safe once again. MPC

[GEEKED AT BIRTH.]

University of Advancing Technology
UAT
Learn. Experience. Innovate.

You can talk the talk.
Can you walk the walk?
Here's a chance to prove it.
Please geek responsibly.

www.uat.edu > 800.658.5744

Game Programming, Game Design
Artificial Life Programming
Computer Forensics and more!

Copyrighted material

Ask the Doctor

MINI DVD TRIBULATIONS

I have a Panasonic VDR-M50 DVD camcorder, and I'm having trouble finalizing the mini DVD-R disc. I keep getting "disc error" messages. Can you help?

—Scott Clark

DVD camcorders are appealing because you can take the media straight from your camcorder and drop it into your DVD player. But before you can do that, you must finalize the disc in the camera. You can't use your PC's DVD-R drive to finalize a disc you created with your camcorder. If it's your camera that's giving you trouble, you might have defective media. If you can't transfer the video to your PC via disc, try using the VDR-M50's USB 2.0 port. If your PC has only slower USB 1.1 ports, you'll have to settle for digitizing the video through your videocard's VIVO port.

The DVDs you create with a DVD camcorder must be finalized in the camcorder—not in your PC.

CARRY IT FORWARD

I have an older Abit KG-7 motherboard with 512MB of DDR2100 memory on it. I would like to upgrade my motherboard soon, so I was wondering if I could use my old memory even though it's slower than what new mobos can handle.

—Jason Neuman

The answer depends on what you upgrade *to*. If you move to a current-gen Pentium 4, D, or EE using DDR2, you'll have to chuck the RAM. If you go with an Athlon 64 FX or X2, you can indeed run your old RAM—but with limitations. You can either run the RAM at DDR266 speeds, or you can try running it at DDR400 speeds with the memory settings—such as latency—cranked way up. It might work, but if there's a hint of instability, set it back to DDR266. And here's one more thing to consider: Dual mode or single mode? If you go with a Socket 939 Athlon 64 FX or X2 and have a single DIMM, you must run it in single-channel mode. You'll need a pair of DIMMs, therefore, for dual-channel capability.

CAN'T GET THERE FROM HERE

I've been looking high and low for an add-in card that accepts component video from standard component cables. I've found plenty of cards that output such signals, but none that accept them. I'd like to connect my GameCube and Xbox to my PC, so I can use my existing computer monitor and speakers.

—Adam Feldhaus

Unfortunately, there's no inexpensive means of displaying component video on a computer monitor that doesn't have component-video inputs. Routing *composite* video and stereo audio to your PC, on the other hand, can be accomplished with a fairly inexpensive box from StarTech. Its Video Game Jockey ($106) takes composite video and stereo audio, passes the audio on to a powered speaker system, and outputs the video to a DB15 VGA connector. Other vendors offer similar solutions.

JUICY JUICE

I just bought a new Palit GeForce 6600 GT 256 AGP card, and something puzzles me: It has a four-pin Molex connector on the top-back corner. Does it really require the extra juice from the power supply, in addition to what it draws from the AGP slot? I ask because I've seen motherboards that take an extra power connection, but only if you want to use an AGP Pro card. I can't find anything in the manual or on the Palit website that tells me if I am supposed to connect the extra power lead or not. I guess common sense would indicate that if it's there, I should use it; but I don't want to risk frying the board if my Dragon SY-KT400 Ultra mobo is already providing it with sufficient power.

—Darrell Sensing

Your motherboard's AGP slot alone won't provide sufficient power for the GeForce 6600 GT, so you definitely should plug in that Molex connector. PCI Express implementations of the GeForce 6600 GT don't have the connector, because the PCI Express bus provides enough juice on its own. Step up to a GeForce 6800 GS or GT, on the other hand, and even the PCI Express won't slake those GPUs' thirst for power.

LEARNING THE HARD WAY

My DSL modem intermittently loses its connection to the Internet for no apparent reason. The Activity LED goes dark, but the DSL indicator remains lit. Even worse, the telephones connected to the same line are sometimes unable to obtain a dial tone. I'm using the recommended line filters. What do you think the problem could be?

—Donald Roberts

The Doctor recently experienced a similar problem. Don't make the same mistake he did. The Doc's DSL modem went on the fritz, so he swapped out the modem and everything worked fine—until his phones quit working. He still had Internet access, but no dial tone on his voice line. A phone-company service call and $55 later, he was informed that the ISP-provided line filter had failed and short-circuited the phone line. Call your ISP and ask them to replace your line filter. MPC

SECOND OPINION

In your November issue, a reader wanted to know how to transfer all his data after adding a larger hard drive to his system. You suggested he use a disk-cloning program like Norton's *Ghost*, but there's a cheaper (read "free") solution: I've had excellent luck using free programs provided by hard drive manufacturers. One of the drives must be the manufacturer's brand, and the new drive must be as big or bigger. Western Digital's software is *Data Lifeguard Tools 11*, Maxtor's is *MaxBlast 4*, and Seagate's is called *DiscWizard*.

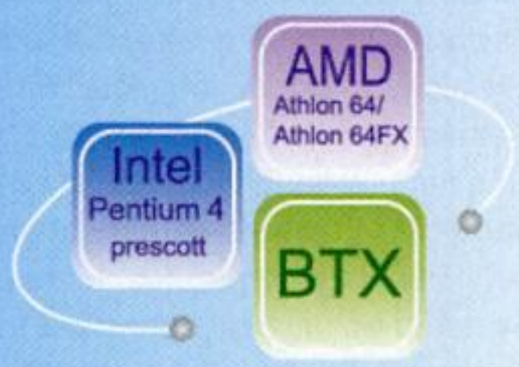
—Jo Will

Has your DVD-R drive suddenly started producing coasters? Does your software refuse to rip your collection of Johnny Cash CDs? Is your monitor spontaneously turning green and spinning? If you've experienced any of these symptoms, your PC could be exhibiting early signs of demonic possession. Send an email describing your problem to **doctor@maximumpc.com,** and he'll chant an incantation just for you.

Copyrighted material

hec®

Compucase Corporation
TEL: (800) 909-6558



WITH TWO COOLING FANS

ACE POWER

New 24 Pin (20+4 Pin) Connector

L-type SATA

6 Pin PCI Express Connector

4 Pin Peripheral Power Connector

Black Braid

Velcro Cable Tie

www.hec-group.com.tw

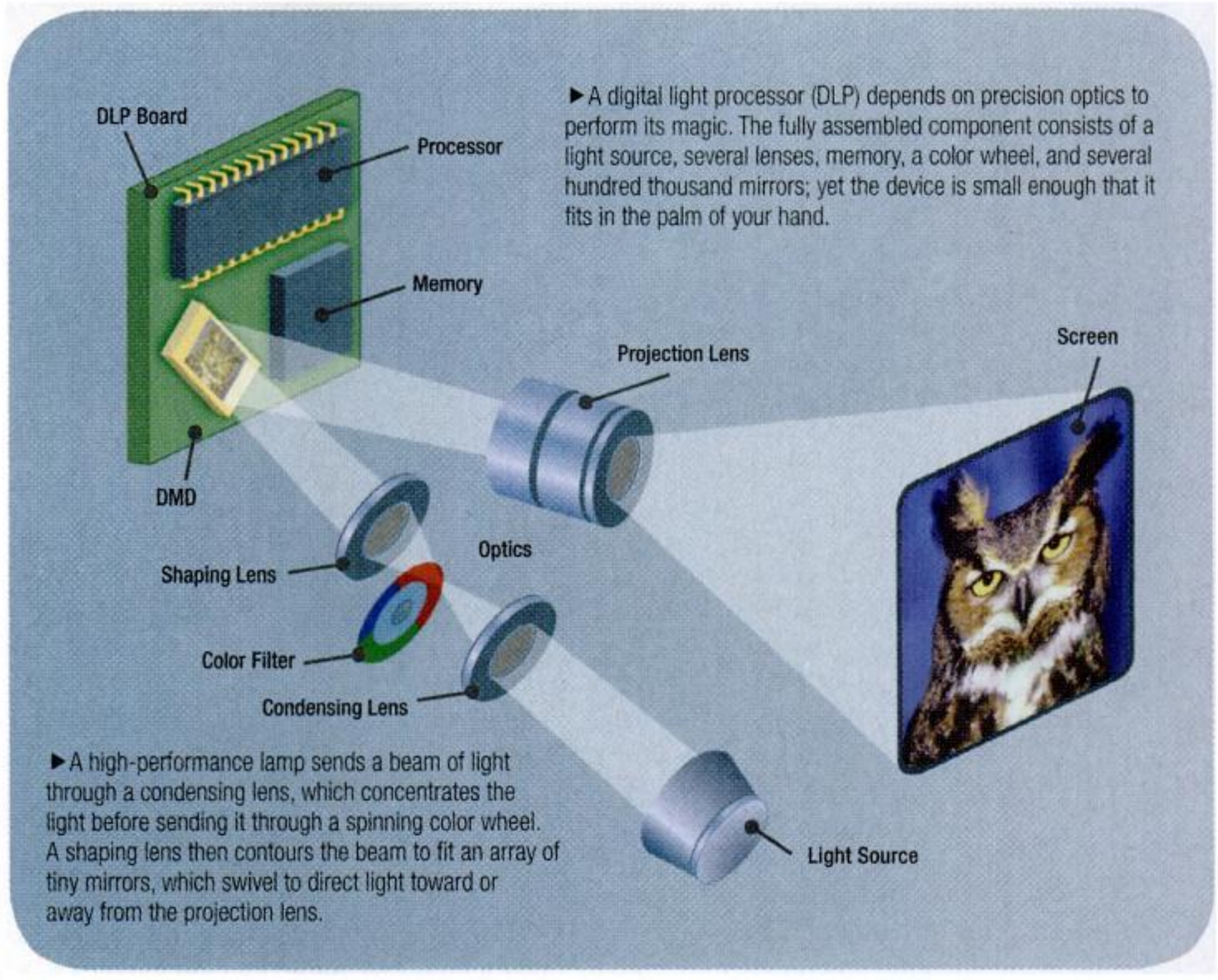
Copyrighted material

White Paper: DLP Technology

How in the world did an effort to streamline airline-ticket printing evolve into one of today's most exciting display technologies? We unravel the mystery!

BY GORD **GOBLE**

HOW IT WORKS **A DIGITAL LIGHT PROCESSOR**



▶A digital light processor (DLP) depends on precision optics to perform its magic. The fully assembled component consists of a light source, several lenses, memory, a color wheel, and several hundred thousand mirrors; yet the device is small enough that it fits in the palm of your hand.

▶A high-performance lamp sends a beam of light through a condensing lens, which concentrates the light before sending it through a spinning color wheel. A shaping lens then contours the beam to fit an array of tiny mirrors, which swivel to direct light toward or away from the projection lens.

The genesis of DLP (digital light processing) dates back nearly two decades and springs from a very unlikely source: A Texas Instruments research-and-development effort to produce a better way to print airline tickets.

TI physicist Dr. Larry Hornbeck had been working stoically, but unsuccessfully, for several years on a reflective imaging technology to do the job. After tossing out his earlier efforts, he decided to experiment with a large array of microscopic mirrors. If each of the mirrors were mounted on an even tinier hinge apparatus, he reasoned, they could be digitally controlled to reflect light toward or away from a target, and Dr. Hornbeck realized he might have something bigger than an airline-ticket printer.

Dr. Hornbecks's effort culminated in the invention of the DLP chip, which can now be found in a wide array of digital televisions and video projectors. Very high-end consumer and commercial devices boast three DLP chips (one for each of the three colors—red, green, and blue—that comprise an image); but for now, we'll concentrate on the operation of single-chip systems.

IT'S A SMALL, SMALL WORLD

To fully appreciate this remarkable technology, you must come to terms with the microscopic size of the elements in a DLP chip. Capable of fitting comfortably in the palm of your hand, a standard DLP chip is fitted with a microprocessor, memory, and an astounding number of minute mirrors, each of which corresponds to one pixel in the display (some DLP rear-projection TVs use each mirror to create two pixels). A front-projection 800x600 SVGA DLP system, for example, incorporates a DLP chip with 800 rows and 600 columns of mirrors, each of which is about one-fifth the width of a human hair.

Powering up a single-chip DLP system activates a single high-performance lamp that fires an exceptionally intense beam of light first through a condensing lens (to concentrate it), and then through a shaping lens (to size and frame the beam onto the mirror array). Each aluminum-coated mirror rests atop a CMOS SRAM memory cell, which is mounted to a fixed post via a pair of torsion bars. The memory cell drives two electrodes with complementary voltages. Depending on the state of the SRAM cell (a "1" or a "0" in the memory), the mirror will be electrostatically attracted to one or the other electrode, either on or off. Each mirror is capable of moving in a 24-degree arc an astounding five thousand times per second.

Mirrors in the "on" position reflect white light toward the portion of the screen that corresponds with a particular pixel. Mirrors that are switched "off" physically aim the light beam away from the screen, producing a true black. Levels of gray are governed by dwell time: the longer a mirror maintains its "on" position, the lighter a gray it will produce.

Left as is, you'd get an extremely accurate, high-contrast, grayscale display. But black-and-white video went out of fashion eons ago, so a color wheel is placed in the path of the light before it strikes the DLP chip. Featuring six swatches of color (two each of red, green, and blue), this outwardly simple apparatus spins in conjunction with the teeter-tottering mirrors on the DLP chip to exponentially increase the 1,024 levels of grayscale into 16.7 million color variations. Once the light passes through the color wheel and reflects off the mirror array, it's directed through a projection lens and hurled toward the screen.

Spaced less than one micron apart, the mirrors produce an extremely clean, fluid image which is much more pleasing to the eye than that produced by low-end and midrange LCDs (gaps between an LCD's pixels can result in vertical banding, commonly known as the "screen door effect"). And because DLP mirrors create black by using an absence of light—remember, mirrors in the "off" position direct their light away from the screen toward

Copyrighted material

a "light absorber"—blacks are very black and contrast levels can exceed 2000:1 (LCDs top out at around 1000:1). The latest DLPs produce an even better black, because they feature a dark metal alloy coating beneath the mirror grid that prevents any stray light particles from reaching the screen.

BUT WILL IT LAST?

DLP chips are manufactured using a semiconductor process, and they're hermetically sealed behind glass to prevent any contamination from reaching the mirrors. TI expects them to have a useful life of 100,000-plus hours (enough for 20 years of eight-hour-per-day viewing). The lamp that works in conjunction with the DLP chip isn't nearly as durable, but it's user-replaceable. Lamp life spans vary greatly, ranging from 2,000 to 6,000 hours for a front-projection lamp, and up to 8,000 hours for the bulb in a rear-projection box. The lamps in stand-alone DLP projectors are more short-lived—and cost substantially more to replace. The lamp for a DLP television costs between $100 and $200, but those for DLP projectors can set you back $350 or more and can succumb after just 1,500 hours when run at their highest brightness levels.

NOTHING'S PERFECT

Every video technology has its downside. CRT TVs top out at 40 inches, suck power like black holes suck matter, and weigh a ton. Plasma screens have a historical reputation for short life spans, poor black-level reproduction, and image burn-in. The biggest hit against single-chip DLP is the so-called "rainbow effect." As the spinning color wheel modulates colors, distinct red, green, and blue elements can separate out as the viewer shifts his eyes from one area of the screen to another. Only a small percentage of viewers ever notice the rainbow effect, and manufacturers have further reduced its impact by increasing the color wheel's rotational speed.

Three-chip DLP systems, meanwhile, avoid the rainbow effect altogether by replacing the color wheel with a prism that separates the light source into red, green, and blue beams. Each of the three beams of light are then focused onto a corresponding DLP chip that is dedicated to producing just that color. Three-chip DLP systems are too expensive to incorporate in today's televisions, but the technology is expected to trickle down into the consumer-electronics market over time.

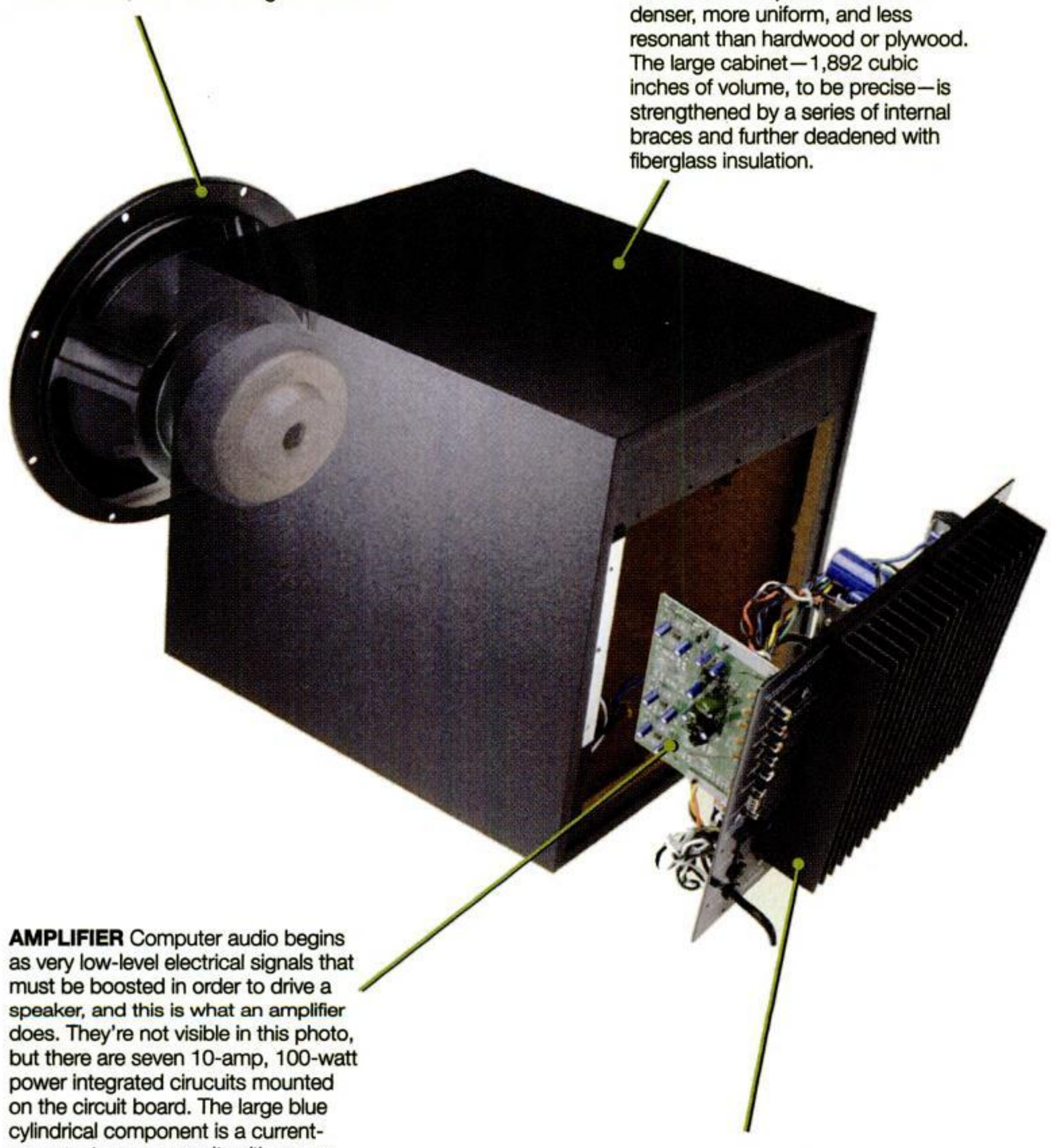
Dr. Hornbeck eventually garnered an Emmy for his innovative work on DLP, but he must be as surprised as anyone that his effort to print a better airline ticket would eventually result in one of today's most exciting display technologies. MPC

Subwoofer

Gamers and home-theater buffs count on a subwoofer to deliver gut-punching low frequencies. We busted this one open to see what they're made of

DRIVER Low frequencies consist of long wavelengths, so you need a large driver to produce them. The subwoofer in Logitech's Z-5500 Digital is a 10-inch, high-excursion driver consisting of a paper cone with a whopping 40-ounce ceramic magnet. "High excursion" means that the speaker cone is capable of moving back and forth a considerable distance, displacing a large volume of air, thus increasing the volume.

ENCLOSURE Bone-rattling bass is fun to listen to, but not if the speaker enclosure is also rattling. Logitech's sub is made from half-inch medium-density fiberboard (MDF), a building material composed of wood fiber and resin, formed under heat and pressure. MDF is denser, more uniform, and less resonant than hardwood or plywood. The large cabinet—1,892 cubic inches of volume, to be precise—is strengthened by a series of internal braces and further deadened with fiberglass insulation.



AMPLIFIER Computer audio begins as very low-level electrical signals that must be boosted in order to drive a speaker, and this is what an amplifier does. They're not visible in this photo, but there are seven 10-amp, 100-watt power integrated cirucuits mounted on the circuit board. The large blue cylindrical component is a current-reserve storage capacitor (there are two of them).

HEATSINK The transistors in a 500-watt amplifier produce a tremendous amount of heat, and audio gear and cooling fans just don't mix. Logitech mounts a very large steel heatsink to a steel plate on the back of the amp in order to radiate that heat away from the transistors. The heatsink's fins dramatically increase the surface area over which heat is distributed.

Copyrighted material

MINI PREVIEW

WD UNLEASHES A BIGGER, BETTER RAPTOR

Double the capacity, double the buffer size, and—gasp—a see-through top!

It's finally here. After months of speculation and wild Internet rumors, the drive we knew Western Digital was building has finally broken cover. If Western Digital can deliver on its promises, the drive should be everything we hoped it would be, and then some.

Let's start with the specs. The new drive will feature a two-platter design, just like the previous Raptor, but capacity will double from 74GB to 150GB. WD is also doubling the buffer size to 16MB.

Command queuing duties will be handled by the industry-standard native command queuing (NCQ) scheme, rather than the proprietary tag command queuing (TCQ) technique the old model offered. We applaud this transition, because TCQ requires a separate add-in controller. NCQ, on the other hand, is supported by the latest nVidia and Intel desktop chipsets. Now anyone running a Raptor on a desktop chipset will automatically see the benefits of NCQ. Although these benefits are usually insignificant for typical single-user environments, anyone looking to run this drive in a server can utilize NCQ without buying a separate controller.

This next revelation will have spec jockeys doing a double take: The drive runs on a SATA 150 interface, instead of the newer SATA 3G interface that offers double the bandwidth. But we consider WD's logic sound: Not even the fastest drives saturate a SATA 150 interface, so there's no reason to open the pipe even wider. As for performance, a WD representative tells us the early drives average read speeds of around 76MB/s.

As exciting as these specs might be, they're not all that surprising. But WD's revelation that there will be two versions of the drive—a "standard" Raptor and a Raptor X—had us salivating at the prospect of the latter: The Raptor X boasts a window exposing the drive's top platter and read/write heads.

Western Digital hadn't determined pricing and availability as we went to press, but reps said these details should be finalized in January. Look for a full review in our March issue.

Preview

Digital Deck Home Entertainment System

Could this be a better media-streaming solution?

Streaming audio and video is a blast, but the typical solution is imperfect, at best. The folks at Digital Deck think they have a better solution, and they're in the process of building a version of their pricey high-end system—available only through custom home-theater contractors—that you'll be able to pick up at your corner consumer-electronics store.

The Digital Deck Home Entertainment System takes a very different approach to A/V streaming.

Digital Deck's criticism of today's A/V streaming systems makes sense. It's nearly impossible to build or buy a PC that will deliver awesome gaming performance and function as a top-shelf media center complete with DVR capabilities. If you have a very large collection of music and movies on disc, ripping it all will require a great deal of time and consume terabytes of storage. And streaming is a one-way affair.

The Digital Deck Home Entertainment System ($450) takes a different approach. It still relies on your PC to function as a server, but media need not be *hosted* on your PC. And streaming can go both ways—from your PC to your home-entertainment system and vice versa. Here's how it's expected to work when it ships in March:

You'll install the Digital Deck server software on your PC, integrate an eDeck (pictured) into your home-entertainment system, and connect the two using Ethernet (yes, the system must be hard-wired). The eDeck has rear A/V inputs for three devices (cable/satellite set-top box, Tivo, CD/DVD jukebox, etc.), plus a fourth set of A/V inputs behind a front panel. The eDeck will digitize incoming analog signals; digital data will be transferred in its native format. Anything coming into any of your eDecks will be accessible from all the rest of the devices in your home.

As you expand the system with additional eDecks ($150 each), you'll be able to stream to and from these units, too. What's more, each eDeck will come with a universal remote control that will operate the eDeck, all the gear in the room equipped with IR sensors, and—with the use of IR blasters—any gear that's connected to the system in any other room.

The dependence on hard-wired Ethernet is bound to be a stumbling block for some consumers, but the upside is bandwidth and expandability. A Digital Deck Home Entertainment System can expand to serve every room in the house. Stay tuned for a full hands-on review.

DigitalDeck
Video Guide
Law & Order on TNT (NR) 4:00pm-5:00pm 10/26/04
"Humiliation" A plastic surgeon is convicted of a hooker's murder when his wife breaks down on the stand.
Press to play this item or for more options.
Play
Delete
Beyond Belief: Fact or Fiction? 1 min 10/27/04
Beyond Belief: Fact or Fiction? 1 min 10/27/04
Law & Order (Castoff) 60 mins 10/26/04
Law & Order (Humiliation) 60 mins 10/26/04
Star Trek (That Which Survives) 60 mins 10/24/04
Law & Order (Seer) 60 mins 10/23/04
Law & Order (Phobia) 60 mins 10/23/04
Star Trek (Mark of Gideon) 60 mins 10/23/04

The Digital Deck software includes a Tivo-like DVR function, including a downloadable TV guide you can control from any of the Decks installed in your home.

Copyrighted material

Systemax

AMD 64 Athlon FX

Systemax recommends
Microsoft® Windows® XP Professional

LIGHTNING STRIKE.

Illusion meets Reality. The SLI inspired Systemax Lightning breaks the barriers of reality powered by the new AMD FX 60 processor featuring Dual Core Technology! Welcome to the world of Cinematic Computing; combining intense graphics, virtual worlds, high-resolution video and sophisticated artificial intelligence to provide a computing experience that looks and feels like an extension of reality.

The Systemax **Lightning** Gamer

- AMD Athlon 64 FX-60 CPU with HyperTransport
- 1 Gigabyte DDR
- (2) 74GB 10,000 RPM Raptors RAID 0
- 250GB SATA HD
- DVD+/- Dual Layer Burner
- CDRW/DVD -ROM Combo
- Dual GeForce 7800 GTX 256MB Video
- SoundBlaster X-fi Xtreme Sound Card
- Microsft Windows XP Professional
- Integrated LAN Support
- Premium Chieftec Case

$3999.99
Item # BTO 038531

Available At:
TigerDirect.com

OR CALL:
888-844-3797
Please Mention Code:
MMAXPC0206

www.TigerDirect.com/MaxPC

Copyright 2005, Systemax, Inc. All rights reserved. All trademarks are property of their respective owners.

nVIDIA SLI

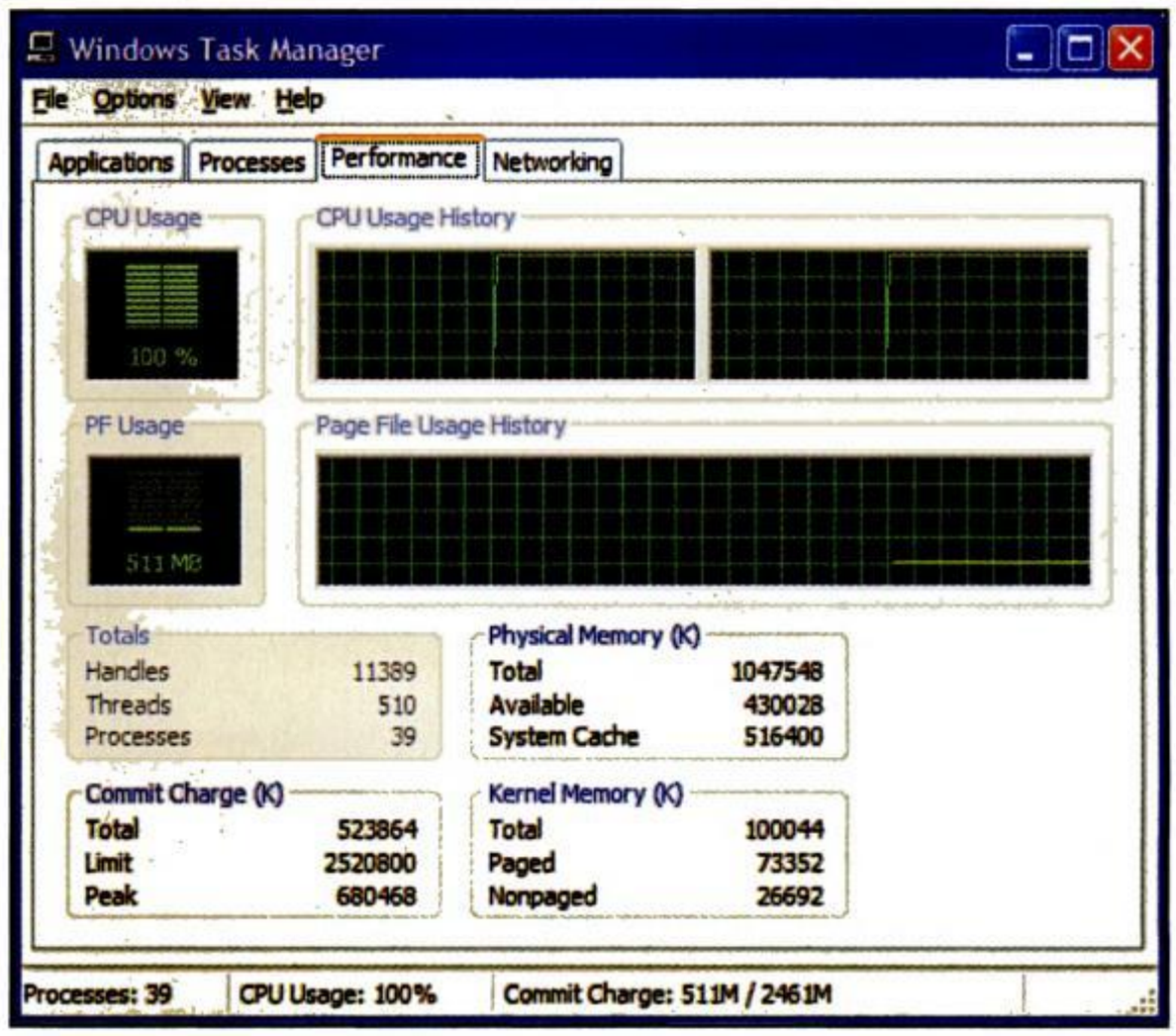
Sound BLASTER X-Fi

Copyrighted material

JOSH **NOREM**

Questions His Single-Core Loyalties

My reaction to the new dual-core CPUs? A yawn. Until I tried one out for a month, that is



Though a dual-core CPU doesn't drastically improve performance in regular desktop workloads, it opens up a whole new world of multitasking possibilities.

Dual-core? More like dual-bore, or at least that's what I thought when the dual-core CPUs arrived back in the middle of 2005. At the time, my single-core Athlon 64 FX-55 CPU, SLI rig was handling all the gaming action I could throw at it without complaint, and I could count the number of multithreaded applications I would use on one hand. Nay, one finger. So why bother?

This prompted Senior Editor Gordon Mah Ung to throw down the gauntlet. "Why don't you run dual-core for awhile... see what you think?" he asked. Never one to shrink from a challenge, I boldly accepted.

After I installed the new CPU, I was peeved to find out it was being recognized as just a single-core processor. This is reportedly a common occurrence with mobos that came out in early 2005, but luckily it's remedied via a BIOS flash. Once I flashed my motherboard's BIOS, both CPU cores showed up, as expected.

For the first week, I proceeded to use my home PC just as I had done back in the single-core days, and to be honest, I was underwhelmed. That's when I realized something: My usage patterns were geared toward single-core action, but now that I had a dual-core CPU I could break free from my single-app, single-game bondage. And so I did. As a test, I decided to play *Quake 4* at 1600x1200 with 8x AA while copying 80GB of data from my hard drive to an external USB drive. Amazingly, the game was smooth as silk. Impressed, I fired up my favorite DVD ripping utility, *DVD Shrink,* which is multithreaded. While it normally takes about 45 minutes to rip a DVD, with my dually installed, it took only 21 minutes. *Hell yeah!*

From that point on, I began to multitask like it was going out of style: I've started ripping DVDs while gaming, burning CDs while running virus scans, and so forth. As a bonus, this dually runs cooler than my FX proc, hitting just 42 C under load (water-cooled, natch). Color me convinced. It's an even more enticing proposition when you factor in the cost: According to Newegg.com, a dual-core 4800+ costs exactly the same as a single-core FX-55. That's a no-brainer indeed.

Gordon Mah Ung

OVERCLOCKS PRESLER

Intel's new 65nm process might take the P4 to 4GHz, but Intel doesn't care

Intel doesn't condone overclocking, but I just had to know if the company's new Presler chip, with its 65nm process, has a cooler head than its bacon-frying sibling, Prescott.

Throwing caution to the wind, I overclocked the 3.46GHz CPU 25 percent, up to 4.25GHz, on a D975XBX motherboard. Surprisingly, the machine posted and ran Windows XP quite well. It wasn't until I tried to run *3DMark* and a couple video-encoding tests that it took a crap. Ah well, so much for getting it right the first time.

I backed the Presler down to 16 percent, which gave me roughly 4GHz and change, and then booted her up without a hitch. The CPU performed perfectly at 4.02GHz in the majority of our benchmarks. I didn't rerun *SYSmark2004* because of a tight deadline (it takes a full afternoon to get the benchmark installed, and another few hours to run it).

As you'd expect, at 4GHz the Presler outpaces the stock-clocked FX-60 in every benchmark except *Photoshop* and *FEAR*. Falcon Northwest achieved a similar 15 percent overclock in its FX-60 system (2.6GHz to 2.9GHz) but had to use water-cooling.

I've long said that the long pipeline of the Prescott, and now Presler, needs to get past 4GHz to be competitive, and this just validates that. But sadly, just when it looks like Intel can finally get there and beyond, it's about to throw the P4 under the bus in favor of the Pentium M. That's a damn shame.

Copyrighted material

How We Test

Real-world benchmarks. Real-world results

Computer performance used to be measured with synthetic tests that had little or no bearing on real-world performance. Even worse, when hardware vendors started tailoring their drivers for these synthetic tests, the performance in actual games and applications sometimes dropped.

At *Maximum PC*, our mantra for testing has always been "real-world." We use tests that reflect tasks power users perform every single day. With that in mind, here are the six real-world benchmarks that we use to test every system we review.

SYSmark2004: This is the most comprehensive application benchmark available, using no fewer than 19 applications to measure the time it takes for the PC to complete to real-world computer-intensive tasks. Our *SYSmark* score is a composite based on the time the test takes to complete several different types of tasks.

Adobe Premiere Pro: The leading nonlinear digital-video editor has recently been retooled with more support for multi-threading. We take a raw AVI file, add several transitions and a soundtrack, export it to a generic MPEG-2 file, and then report the time the script takes to complete.

Adobe Photoshop CS: We don't subscribe to Apple's half-baked idea that running one filter test in *Photoshop*, in one certain way, at a particular time of day provides an accurate measure of performance. Instead, we take a high-resolution image and throw it through just about every filter available in *Photoshop CS* at it. Our score is the time it takes for the script to complete.

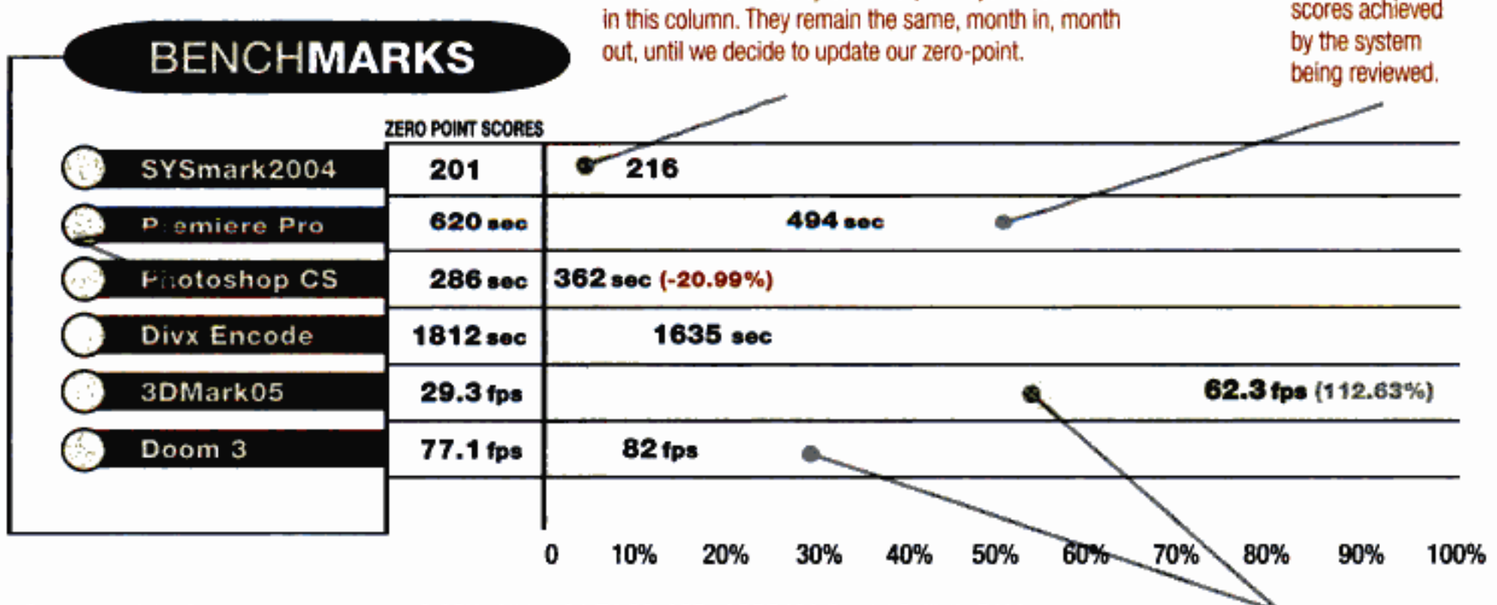
Divx Encode: Video encoding is today's time-suck. We transcode a short movie stored on the hard drive from MPEG-2 to Divx using *#1 DVD Ripper.* We report the length of time the process takes to complete.

3DMark05: After ranting about real-world tests, you might be surprised to find this "synthetic" graphics test in our suite. *3DMark05*, however, has proved to be the standard by which graphics cards and PCs that run them are judged. Instead of reporting a meaningless composite score, we run the third test at 1280x1024 with 4x antialiasing and 4x anisotropic filtering, then report the frame rate. Our zero-point system with SLI can't even break 30 frames per second.

Doom 3: Id's hugely popular game is a dark, scary, and serious test of PC horsepower. We run this game with 4x antialiasing and 4x anisotropic filtering, at 1600x1200 resolution, and report the frame rate.

How to Read Our Benchmark Chart

Maximum PC's test beds double as zero-point systems, against which all review systems are compared. Here's how to read our benchmark chart.



The scores achieved by our zero-point system are noted in this column. They remain the same, month in, month out, until we decide to update our zero-point.

The actual scores achieved by the system being reviewed.

The names of the actual benchmarks used.

Our zero-point reference systems uses a 2.6GHz Athlon 64 FX-55, 2GB of DDR400 Crucial Ballistix RAM, two nVidia GeForce 6800 Ultra cards in SLI, a Maxtor 250GB DiamondMax10, a Sound Blaster Audigy 2 ZS, a PC Power and Cooling TurboCool 510 Deluxe Express, and Windows XP Pro with SP2.

Every month we remind readers of our key zero-point components.

The bar graph indicates how much faster the review system performed in respect to the zero-point system. If a system exceeds the zero-point performance by more than 100 percent, the graph will show a full-width bar and a plus sign.

BEST OF THE BEST

Our monthly category-by-category list of our favorite products. New products are in red.

High-end videocard:
eVGA e-GeForce 7800GTX KO ACS³

Midrange videocard:
Leadtek WinFast 7800GT TDH Extreme

Soundcard:
Creative Labs X-Fi Extreme Music

Hard drive:
Western Digital WD400KD

External backup drive:
Western Digital Dual-Option Media Center 320GB

Portable USB drive:
Seagate Portable External Hard Drive 100GB

DVD burner:
Plextor PX-716A

Widescreen LCD monitor:
Dell 2405FPW

Desktop LCD monitor:
Samsung SyncMaster 940BF

Socket 939 Athlon 64 mobo:
Asus A8N32-SLI Deluxe

Socket 775 Pentium 4 mobo:
Asus P5ND32-SLI

Portable MP3 player:
Apple iPod 60GB

Photo printer:
Canon i9900

5.1 speakers:
M-Audio Studiophile LX4 5.1 (LX4 2.1 with 5.1 Expander System)

2.1 speakers:
M-Audio Studiophile LX4 2.1

Mid-tower case:
Lian Li PCV-1100

Full-tower case:
Silverstone TJ07

Games we are playing:
Need for Speed: Most Wanted, The Movies, Stubbs the Zombie, FEAR, Quake 4, Battlefield 2

Copyrighted material

AOpen Mini PC

Cool, tiny, and mostly quiet, AOpen's Mini PC could spawn a revolution

There have been few watershed moments in the history of the PC formfactor: There was, of course, the tectonic-plate shift that moved us from AT to ATX. And there was the meteor-strike from Shuttle that created powerful and fast yet small computers, legitimizing the small-formfactor PC in power-users' eyes.

AOpen's new Mini is far too new to declare it a major shift in PC formfactors, but our experience with this wee machine leads us to believe it has the potential to spark a revolution.

That's because this AOpen Mini PC is just so frickin' cool. Not cool in the way that two burly 512MB GeForce 7800 GTX cards slicing through a game is cool. Not even cool like a dual, dual-core machine transcoding a DVD in five minutes. No, the AOpen Mini is more like the cool of those miniaturized RC cars, or cool like, well, Apple's Mac Mini.

In fact, the similarities between Apple's and AOpen's Minis are so uncanny, we're seriously wondering when Steve Jobs will let loose the lawyers of war. (Apple successfully lawyered a clone of the iMac off the market years ago.) That the AOpen Mini was code-named Pandora might have special significance if the Apple legal SWAT team shows up.

Not to be confused with Apple's product, the AOpen Mini bears the same looks and dimensions as the Mac Mini, but houses PC parts.

Be that as it may, the AOpen Mini PC is an amazing balance of miniaturization and user-friendliness. We expected the Mini to be horrible to wrench on, but it's an easy unit to crack open. To get at its innards, you unfasten four screws on the bottom and pry off the aluminum shell. A slot fed DVD drive and parallel ATA hard drive are attached to the lid. Inside, a motherboard sporting Intel's 915G chipset, a SO-DIMM slot, and a Socket 479 CPU give you some upgrade options—including whatever you can jam into the PC's single mini PCI slot.

AOpen is selling the unit two ways: as a standard bare-bones configuration, to which you add your own CPU, RAM, and HD; or as a fully outfitted machine, such as the one reviewed here, sold by resellers such as Voodoo PC. AOpen expects Mini machines with a Celeron M and Windows XP to cost around $500, while open-source aficionados can shave off about $100 from that price by going with Linux.

We tested the Mini with the hottest processor it'll take: a 1.73GHz Pentium M 740 riding the 533MHz front-side bus. A 60GB 2.5-inch parallel drive and half a gig of DDR RAM completed the configuration.

Our Mini's performance wasn't great when compared with our zero-point Athlon 64 FX-55 box, but we didn't expect a rig this small to really compete with a full-tilt SLI Athlon 64. In *SYSmark2004* it turned in a decent, but by no means great, 123 score. To add some perspective, the Pentium M-equipped Puget Systems PC we reviewed in our Holiday 2005 issue pulled down 179, while our October 2005 Lean Machine with its Athlon 64 3000+ and 1GB of RAM spit out just 155. (Amazingly, the Mini managed to run our Divx encoding gauntlet faster than our Lean Machine.)

Clearly, this isn't just some pathetic Transmeta CPU machine. It's more than capable as an Internet browsing box, can handle most office chores, and is even capable of

SPECS

CPU	Intel 1.73GHz Pentium M
MOBO	AOpen proprietary, Intel 915G chipset
RAM	512MB DDR2 SO-DIMM
I/O PORTS	Two USB, one FireWire A, DVI
LAN	Onboard Gigabit Ethernet
HARD DRIVE	60GB parallel
OPTICAL	Matshita UJ-845S
VIDEOCARD	Integrated

Despite its size, the Mini PC is quite easy to work on.

BENCHMARKS

	ZERO POINT SCORES	
SYSmark2004	201	123 (-38.81%)
Premiere Pro	620 sec	884 sec (-29.86%)
Photoshop CS	286 sec	886 sec (-67.72%)
Divx Encode	1812 sec	2339 sec (-22.53%)
3DMark 05	29.3 fps	WNR
Doom 3	77.1 fps	WNR

0 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Our zero-point reference system uses a 2.6GHz Athlon 64 FX-55, 2GB of DDR400 Crucial Ballistix RAM, two nVidia GeForce 6800 Ultra cards in SLI, a Maxtor 250GB DiamondMax10, a Sound Blaster Audigy 2 ZS, a PC Power and Cooling TurboCool 510 Deluxe Express, and Windows XP Pro with SP2.

Copyrighted material

some photo editing—if you add more RAM.

The Mini is far from perfect, but as a version 1.0 product, it's pretty compelling. We can think of at least one improvement for the second version: more USB ports, especially on the side or front. Two USB ports aren't enough—that limits your peripherals to just a mouse and keyboard. We'd also like to see a design that includes an nVidia MXM module slot, so a graphics upgrade is possible. As is, the Mini's not a viable gaming rig, but it could be with a GeForce Go 7800 Go GTX. (Talk about a lightweight LAN party companion!) Our final suggestion is that future versions of the Mini have separate channels for the optical and IDE drives, to eliminate the potential for a performance bottleneck during heavy use.

But who are we kidding? You're not going to buy the Mini to play *Quake 4* or rip your entire DVD collection. You're going to buy it to connect to your HDTV, or to hide in a corner of your living room. And to those ends, the Mini is ideal.

AOPEN MINI PC

+ BLUE BUBBLE GUM SODA

Small and capable of a few upgrades.

– TURKEY AND GRAVY SODA

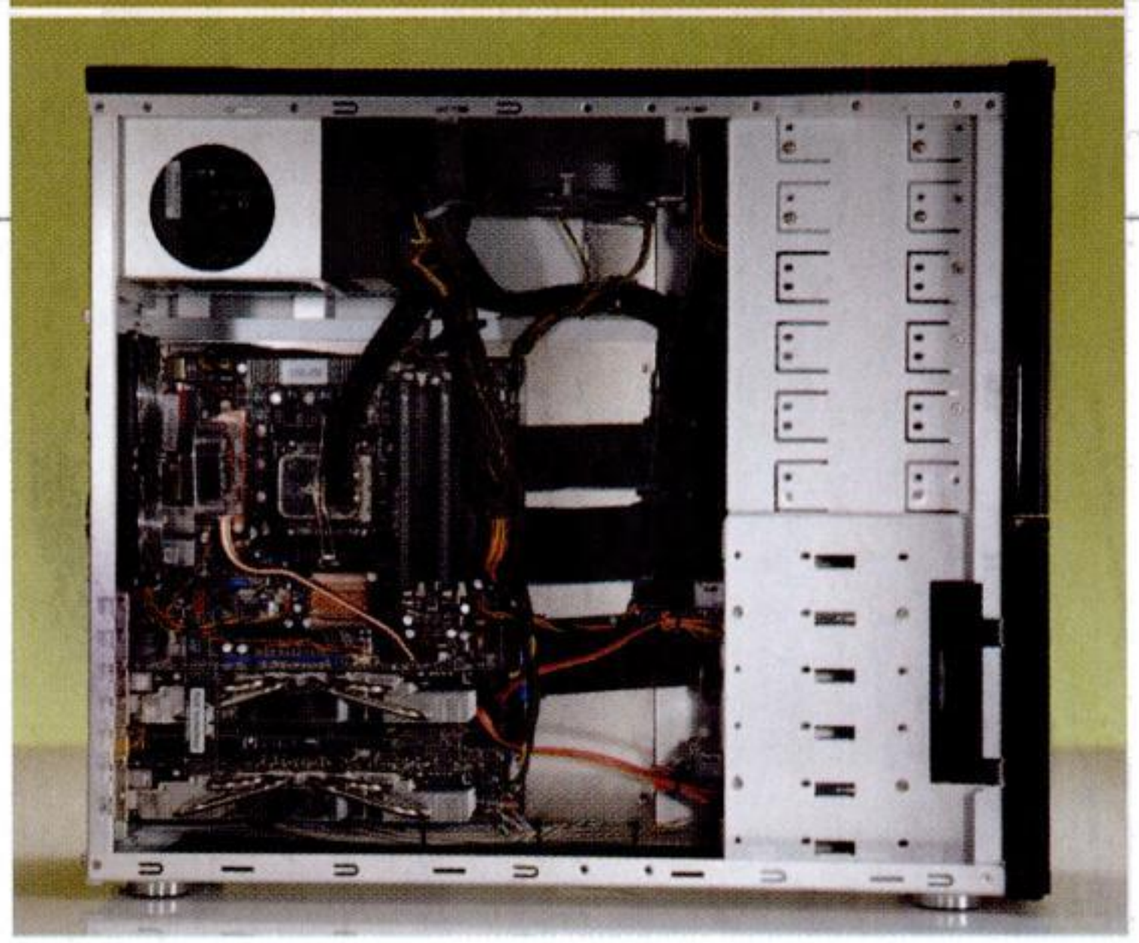
Not enough USB ports and lacking a discrete graphics option.

9

$365 (bare-bones), $850 (as reviewed), www.aopen.com

Falcon Northwest Mach V

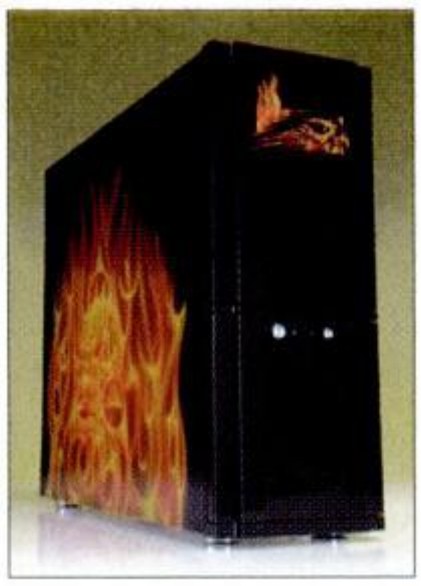
An overclocked FX-60 and two 512MB 7800 GTX cards make the Mach V a record smasher, again



The Mach V slices and dices through the benchmarks, but the wiring job is a little sub par.

It's the worst-kept secret in the PC business: All of the manufacturers have access to the exact same parts. So can a brand A machine *really* be any faster than a PC from brand B?

You bet your sweet ass it can. At least, that's what we discovered when we fired up Falcon's latest iteration of the famous Mach V. We'll just go ahead and tell you now: This is the fastest PC we've ever tested.



A testament to pure PC power, the Mach V's paint job might be a little off-putting in the Bible Belt.

Falcon didn't simply settle for the fast-as-hell Athlon 64 FX-60, which is basically a dual-core FX-55 CPU. Instead, Falcon took AMD's flagship proc, water-cooled it, then overclocked the CPU from 2.6GHz to a stable 2.9GHz. In effect, that makes this rig slightly faster than a single-core Athlon 64 FX-57 in single-threaded apps. And for anything multithreaded, you better hit the deck.

To add a little more pain to its game, Falcon snagged a pair of BFG GeForce 7800 GTX OC cards with 512MB frame buffers—cards so fast, they should really be called GeForce *8000* GTXes—and plugged them into an Asus A8N32-SLI Deluxe board, which features two x16 lanes for the graphics cards.

All this, kiddies, adds up to the fastest PC we've laid hands on since, well, the last Falcon Northwest Mach V box we reviewed in May 2005. That in itself is quite a feat considering the caliber of machines we get on a monthly basis.

Sure, others have chipped away at the previous Mach V's records. In September, Monarch's FX-57 box took top honors in *3DMark05* and tied the old Mach V in *Photoshop CS*. A month later HyperSonic's FX-57 snagged the *Doom 3* title. Still, the older Mach V held onto the record for *SYSmark2004, Premiere Pro, Photoshop CS,* and our Divx test—until now.

The new Mach V blew into the Lab and grabbed records in five out of six benchmarks. The sole exception being the Divx Encode test—that record remains in the clutches of, wouldn't you know it, the old Mach V. Particularly astounding is this Mach's *SYSmark2004* score. Falcon sent us the Mach V with the caveat that a bug in the nForce drivers dropped performance scores in that one benchmark. (We confirmed the bug's existence on our own hardware—our FX-60 performed like an Athlon 64 X2 4400+.) Thus, by all rights, the Mach V's already-stellar *SYSmark* score should be even faster.

Last month we asserted that gaming performance is a little more important than application performance, but with the Mach V you get both. The Mach V's FX-60 and pair of 512MB 7800 GTXs are roughly 19 percent faster than the previous record holder in *3DMark*. In *Doom 3,* the Mach V is a whopping 34 percent faster than the old record.

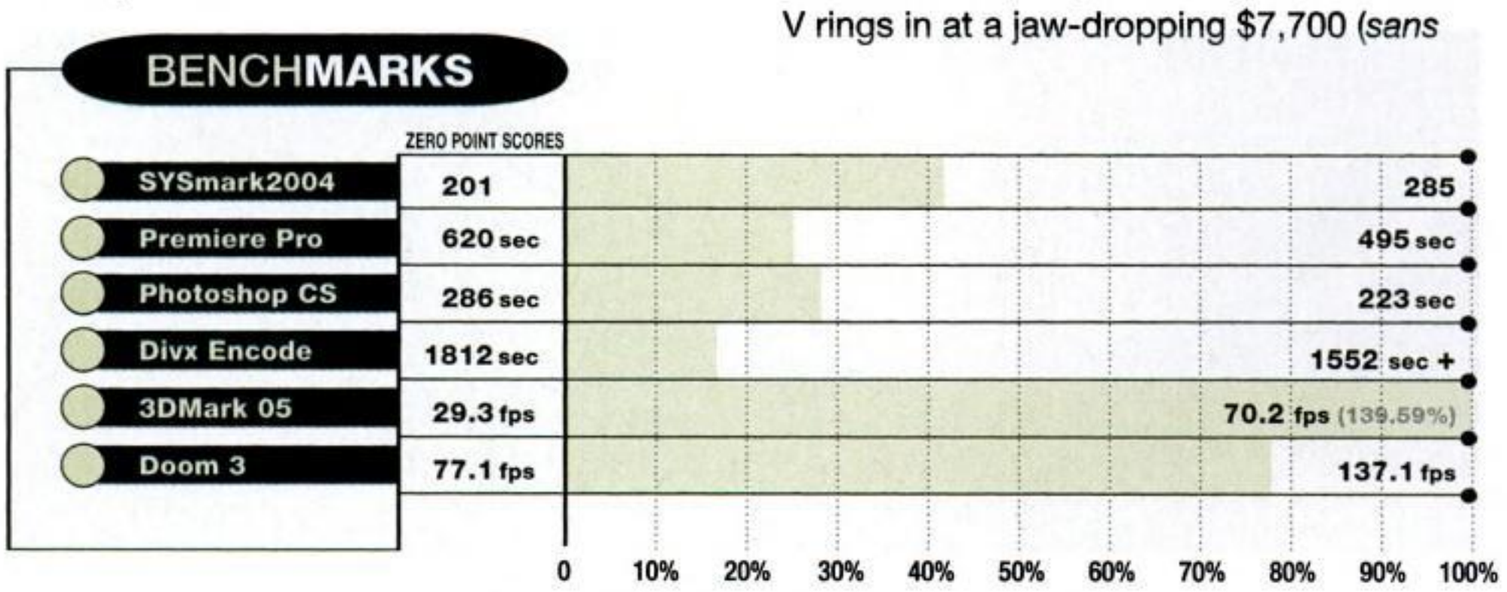
All this goodness doesn't come cheap, of course. With its exotic-car-quality paint job and bounty of powerful gear, the Mach V rings in at a jaw-dropping $7,700 (*sans* monitor and speakers!). Think about it: The two 512MB graphics parts street for about $1,500 all on their own. Some of the cash is for the tech support (as with any OEM), some is for bragging rights, and the rest is for brand. What's in a brand? For Falcon, pure speed, apparently.

—GORDON MAH UNG

UNDER THE HOOD

BRAINS	
CPU	AMD Athlon 64 FX-60
MOBO	ASUS A8N32-SLI Deluxe
RAM	2GB Corsair Micro TwinX DDR400
I/O PORTS	8 USB, 1 FireWire, 1 EX-SATA
LAN	Dual Gigabit Ethernet
HARD DRIVES	Two Seagate Barracuda 7200.8 7200rpm 400GB in RAID 0
OPTICAL	Sony 16X Speed DVD-ROM, Lite-On 16X Dual Layer DVD+-/RW
BEAUTY	
VIDEOCARD	Dual BFG GeForce 7800GTX OC 512MB
SOUNDCARD	Creative Labs Xtreme Music X-Fi
CASE	Silverstone TJ03 with Exotix paint job, ICON water cooling, Silverstone 600 watt modular PSU
MOUSE	Logitech G7
KEYBOARD	Logitech Elite and Ergodex DX-1 Falcon Edition
BOOT: 50 sec	DOWN: 13 sec

BENCHMARKS



Our zero-point reference system uses a 2.6GHz Athlon 64 FX-55, 2GB of DDR400 Crucial Ballistix RAM, two nVidia GeForce 6800 Ultra cards in SLI, a Maxtor 250GB DiamondMax10, a Sound Blaster Audigy 2 ZS, a PC Power and Cooling TurboCool 510 Deluxe Express, and Windows XP Pro with SP2.

FALCON NORTHWEST MACH V

+ LITHIUM ION

Performance with a capital P and show-car-quality paint job.

– NICAD

A price that would make Bill Gates wince. Unpainted drive bezels?!

9

MAXIMUM PC KICKASS

$7,745, www.falcon-nw.com

Copyrighted material

Cyberpower Gamer Ultra 8500 SE

A grand gaming system, literally

Some of us were lucky enough to score screaming FX-60, 7800 GTX SLI systems during the winter holidays. The rest of us are wondering what wrong we committed to deserve fruitcake from our nearest and dearest. Well, now you can give yourself a little post-holiday cheer with Cyberpower's Gamer Ultra 8500 SE, a gaming PC that rings in at just 10 large.

Housed in the familiar Aspire Turbo X-Cruiser case, the Gamer Ultra doesn't stand out like boutique rigs (the Hypersonic Cyclone still whirls in our dreams). Sure, the case is pre-modded, with a side window and blue LEDs, but there's no disguising the plastic case's budget quality.

Gauges on the Gamer Ultra's front bezel provide system info, and look cool.

Inside the case, you'll find an entirely respectable machine. We dig the dual-core CPU—an Athlon 64 X2 3800+, which runs at 2.0GHz—1GB of DDR400 SDRAM, a 200GB Maxtor DiamondMax 10 hard drive, and a GeForce 6600 256MB videocard, all tied into an nForce4 SLI chipset motherboard. Cyberpower included a few tasty extras: a 12-in-1 media reader, a wireless G network card, and a bright Viewsonic 17-inch LCD display. We've heard there's more to PCs than raw performance, and we're impressed with what Cyberpower offers for a cool grand.

We didn't expect the Gamer Ultra to fare well in our performance-wrenching benchmarks. With year-old parts, the Gamer Ultra is no match for even our FX-55-powered zero-point rig. Comparing it with any recent system we've reviewed is just beating a dead horse—this pony ain't winning the race.

The Cyberpower's hard-to-beat price will make you light up like this case's blue LEDs.

It makes more sense to compare the Gamer Ultra to our most recent Lean Machine (October 2005), as both machines attempt to balance price and performance. Thanks to its dual-core processor, the Gamer Ultra snaked past the Lean Machine in most of our benchmarks.

The Gamer Ultra's score of 158 in *SYSmark2004* was 3 points higher than our Lean Machine's, but it still charts the lowest of any system we've reviewed in months. Performance in *Premier Pro, Photoshop,* and the Divx encode ranged from 12 to 30 percent lower than our zero point, but 10 to 16 percent higher than our Lean Machine.

Most of us want performance where it counts: gaming. Panting out 6.93fps and 10.7fps in *3DMark05* and *Doom 3,* respectively, suggests that the 6600 GT should be the first component to be upgraded. With its 6800 GT, our Lean Machine scored 171 percent higher in *3DMark05* and 285 percent higher in *Doom 3.* That's to be expected as the 6800 boasts twice as many pixel pipelines, vertex units, and double the interface bandwidth.

With a Socket 939 and an SLI-compatible motherboard, the Gamer Ultra has a nice upgrade path, which is a major consideration when buying any system. But with its lackluster specs and sluggish gaming performance, you'll want to upgrade this rig as soon as you take it out of the box.

—CLAUDE MCIVER

UNDER THE HOOD

BRAINS	
CPU	AMD Athlon 64 X2 3800+
MOBO	MSI K8N nForce4 SLI
RAM	1GB Dual Channel DDR PC3200
LAN	Onboard Gigabit
HARD DRIVE	Maxtor 200GB
OPTICAL	Sony 16X DVD+-RW
BEAUTY	
VIDEOCARD	Asus GeForce 6600 256MB PCI-E
CASE	Turbo X-Cruiser Case, 420 Watt Thermaltake
BOOT: 29 sec.	DOWN: 9 sec.

BENCHMARKS

	ZERO POINT SCORES	
SYSmark2004	201	158 (-21.39%)
Premiere Pro	620 sec	801 sec (-22.60%)
Photoshop CS	286 sec	320 sec (-10.63%)
Divx Encode	1812 sec	2215 sec (-18.19%)
3DMark 05	29.3 fps	6.93 fps (-76.35%)
Doom 3	77.1 fps	10.7 fps (-86.12%)

0 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Our zero-point reference system uses a 2.6GHz Athlon 64 FX-55, 2GB of DDR400 Crucial Ballistix RAM, two nVidia GeForce 6800 Ultra cards in SLI, a Maxtor 250GB DiamondMax10, a Sound Blaster Audigy 2 ZS, a PC Power and Cooling TurboCool 510 Deluxe Express, and Windows XP Pro with SP2.

CYBERPOWER GAMER ULTRA

+ CHOCOLATE KISSES

Insanely low price, dual-core CPU, and included 17-inch LCD display!

− MARSHMALLOW BUNNIES

Outmoded technology, and iffy gaming performance.

7

$1,000, www.cyberpowersystem.com

Copyrighted material

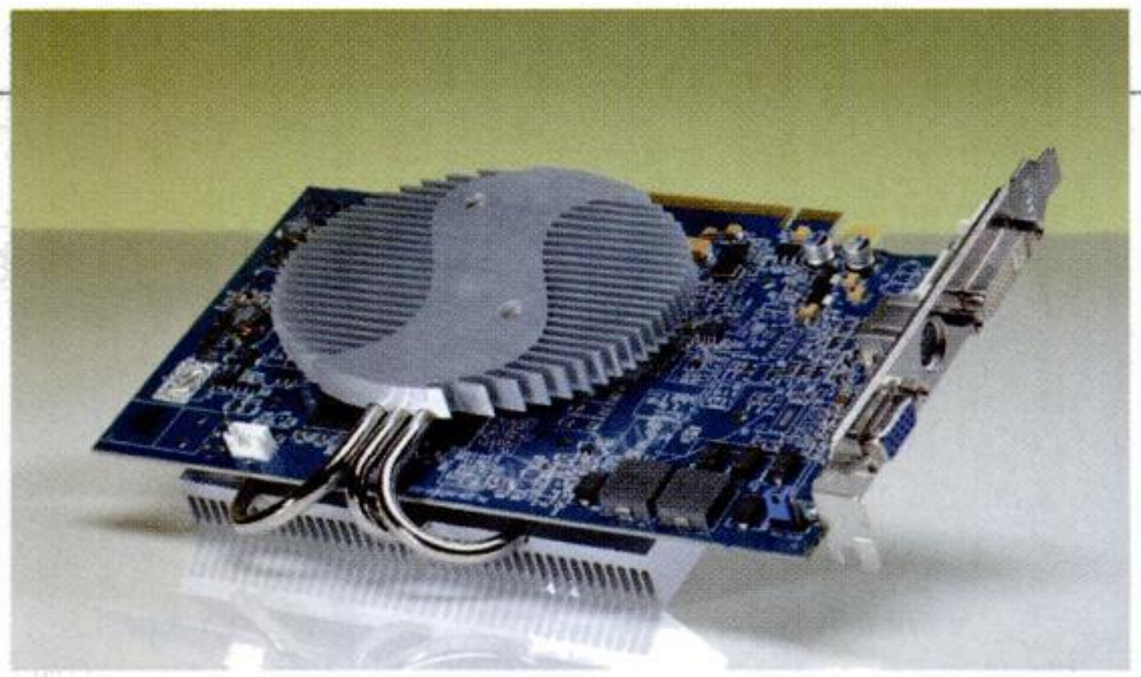
Sapphire Radeon X800 GTO Ultimate

Silence is golden (but performance is platinum)

We've put up with hot, noisy graphics cards for so long that we'd almost forgotten there was a time when the little buggers didn't need cooling fans. Sapphire's Radeon X800 GTO Ultimate brings back that age with just a few compromises.

Sapphire's engineers selected ATI's last-generation Radeon X800 GTO for the mission, so this card won't win any drag races. But the X800 GTO is no jalopy, either: The GPU offers 12 pixel pipelines and a 256-bit memory interface; Sapphire clocks the core at 400MHz and the 256MB of GDDR3 memory at 490MHz.

But Sapphire's fan-less cooling solution is the feature that piqued our interest. A large oval heatsink is mounted on the front of the board, directly over the GPU. Three heat pipes emerge from beneath the heatsink, arc over the edge of the card, and disappear beneath an equally large rectangular heatsink mounted to the back. The oval heatsink covers the entire GPU and blocks the adoining slot. The heatsink on the back radiates heat from both the GPU and memory. Both components got scorching hot—surface temps registered 61.7 C—during benchmark testing.



Sapphire's X800 GTO Ultimate features an absolutely silent, fanless cooling solution.

Anyone contemplating buying this card should bear in mind that they'll be giving up support for Shader Model 3.0 and a lot of speed in their pursuit of silent running. They should also not expect state-of-the-art performance—this card's benchmark scores were a shade better than ATI's X1600 XT, but they were a bit slower than the nVidia 6800 GT cards we've tested.

It would be unfair to judge this card based solely on its benchmark numbers—especially if gaming isn't your primary application. It's hard to put a price on peace and quiet, and the X800 GTO Ultimate is priced only about $10 to $15 higher than conventionally cooled cards based the same GPU. It could be the perfect fit for anyone looking to build or upgrade a home-theater PC.

—MICHAEL BROWN

X800 GTO ULTIMATE **7**

$185, www.sapphiretech.com

BENCHMARKS

	RADEON X800 GTO ULTIMATE	GEFORCE 6800 GT
DOOM3 (FPS)	22.3	**38.9**
FAR CRY (FPS)	54.2	**70.0**
HALO (FPS)	53.9	**62.6**
3DMARK05	4,618	**5,007**
HQV SCORE	38	**56**

Best scores in each category are bolded. Halo tested at 1600x1200 with sound disabled. Doom 3 tested at High Quality, 1600x1200, 4x AA. Far Cry and 3DMark03 Game 2 and Game 4 tested at 1600x1200, 4x AA, 8x aniso. 3DMark03 and 3DMark05 run using default settings. HQV score is derived from the HQV Benchmark DVD.

ATI All in Wonder X1800 XL

There's a lot to like here

ATI's X1000-series GPUs haven't exactly bowled us over with their 3D prowess, and the X1800 XL is no exception. But this All in Wonder package is such a compelling value that anyone interested in adding a TV tuner to their PC should take a serious look.

Before we dig in, let's get this caveat out of the way: The Microtune 2121 digital TV/FM radio tuner in the All in Wonder X1800 XL supports only analog cable and over-the-air broadcasts. If you have satellite or digital cable, you can use a pass-through via channel two or three, but you won't be able to change channels, unless you buy a stand-alone IR blaster, and TV-viewing software that supports it.

Still interested? Good, because the All in Wonder X1800 XL crams a wealth of goodies into a package that's priced on par with conventional X1800 XL cards. (At press time, the AIW commanded just a $40 price premium over third-party vanilla X1800 XL boards.)

The included third-generation Remote Wonder Plus, for instance, is useful not only for channel surfing or accessing the card's Tivo-like DVR features—it also functions as a mouse for controlling virtually any aspect of your PC.

The latest entry in ATI's All in Wonder series delivers good 3D performance, a TV-tuner, DVR capabilities, and much more.

We don't normally give a squat about software bundles, but software is an essential element of this package. This AIW is compatible with Microsoft's Windows Media Center, but ATI also provides its own 10-foot user interface if you don't own that OS. And folks interested in photo and video editing will be pleased to hear that Adobe's *Photoshop Elements* and *Premiere Elements* are both in the box.

Given the poor performance that ATI's videocards have shown with the *HQV Benchmark*, we were eager to test this latest All in Wonder. We're pleased to report that this card delivered considerably better video quality than past cards. ATI still hasn't entirely closed the gap with nVidia, but it's getting closer.

ALL IN WONDER X1800 XL **8**

$400, www.ati.com

—MICHAEL BROWN

BENCHMARKS

	X1800 XL
DOOM3 (FPS)	41.5
FAR CRY (FPS)	72.4
HALO (FPS)	80.2
3DMARK05	7,198
3DMARK03	13,364
3DMARK03 GAME 2 (FPS)	35.5
3DMARK03 GAME 3 (FPS)	44.0
HQV SCORE	46

Halo tested at 1600x1200 with sound disabled. Doom 3 tested at High Quality, 1600x1200, 4x AA. Far Cry and 3DMark03 Game 2 and Game 4 tested at 1600x1200, 4x AA, 8x aniso. 3DMark03 and 3DMark05 run using default settings. HQV score is derived from the HQV Benchmark DVD.

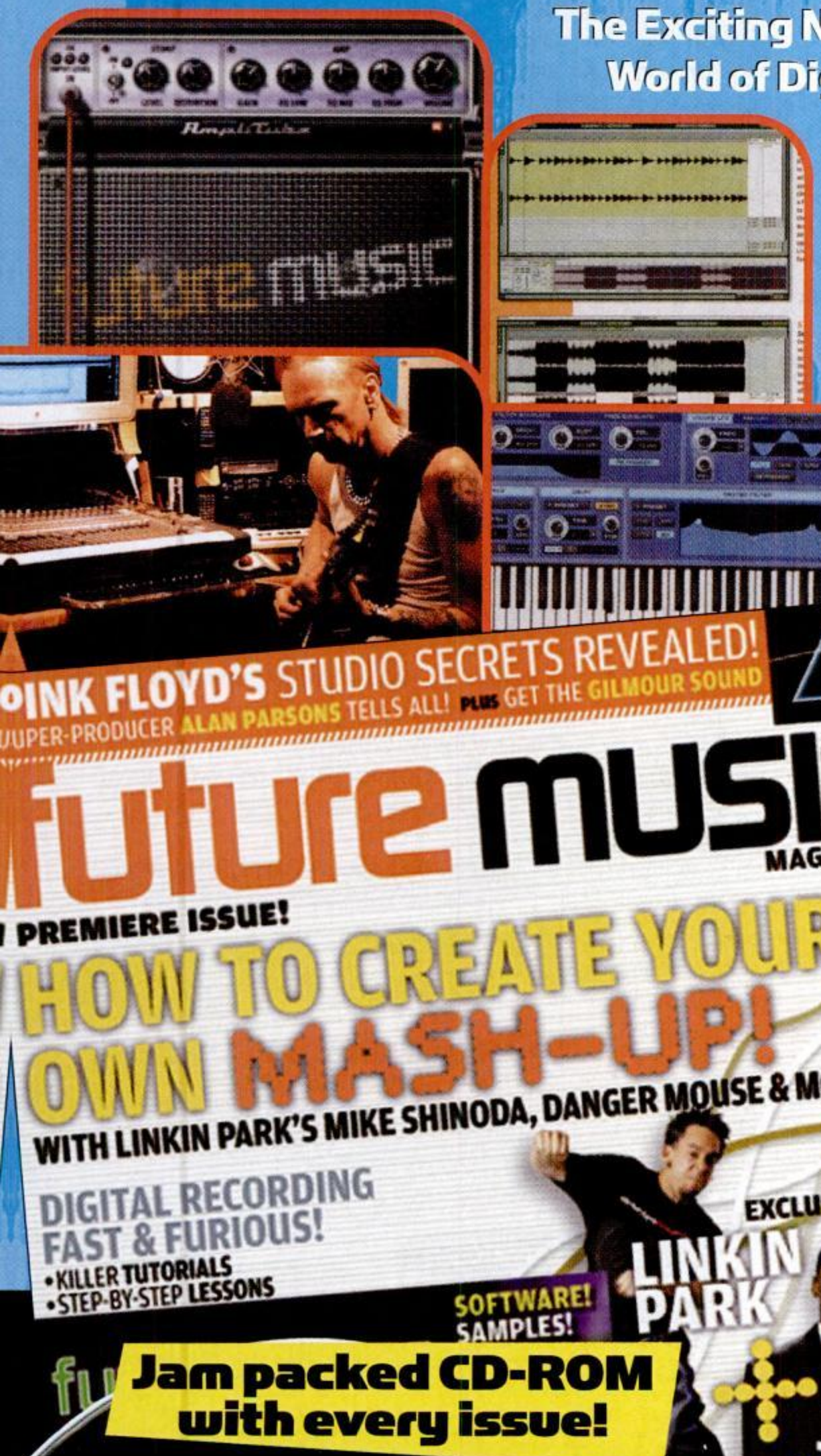
Copyrighted material

Jam packed CD-ROM with every issue!

Special Offer For future MUSIC

TRY A FREE ISSUE!

The Exciting New Monthly Guide to the Fast-Moving World of Digital and Computer Music Creation



- **Easy-to-understand, step-by-step how-to's and tutorials** to help you master music software and hardware fast...including tons of cool insider tips and tricks.
- **Profiles of top artists and producers** on the frontlines of the digital music revolution... with crucial "how they did it" techniques.
- **Super-useful and informative reviews of new gear and products.** Not just "what it does" but also "why you should (or shouldn't) buy it."
- **Amazing CD-ROM with every issue** (Mac and PC compatible) filled with Free Software...demos...sound samples and loops... videos...interactive tutorials ...and much more!

Detach and mail the Charter Savings Reply Card today to receive your FREE ISSUE!

Or Call Toll FREE 1-800-825-2234

Here's the deal. Act now to get your **FREE ISSUE** (with CD-ROM) of **FUTURE MUSIC**, with no obligation. If you like it, pay only **$24.95** for 11 additional issues and CD-ROMS, for a total of 12 in all. Regular cover price — $7.99. **Your price with this offer — Only $2.08!** YOU SAVE OVER $70! But please hurry! *This CHARTER SUBSCRIBER SAVINGS offer is good for a limited time only!*

Money-Back Guarantee of Satisfaction

If you ever feel that **FUTURE MUSIC** is not living up to your expectations, just tell us and we'll send you a prompt refund on all unmailed issues.

EF85ADFMY

Copyrighted material

Half-Terabyte Drive Fight

Underwhelming entries from two heavyweights

June's arrival of the first 500GB desktop hard drive—the Hitachi Deskstar 7K500—sent shock waves through the magnetic-storage industry, and sent competing drive makers clamoring to get their next-gen drives out the door. Western Digital responded to Hitachi's salvo with its WD400KD, which is extremely fast but still 100 gigs shy of a half-terabyte. This month, Maxtor and Seagate step up to take a swing at Hitachi with their own 500GB drives. Unfortunately, neither drive blew our skirts up.

—JOSH NOREM

MAXTOR DIAMONDMAX 11

We were big fans of Maxtor's last hard drive, the DiamondMax 10. It was the first desktop drive to sport a bodacious 16MB buffer, one of the first drives to offer native command queuing, and was an all-around excellent performer. We liked the drive so much, we decided to use the DiMax 10 in our zero-point test benches. Clearly, the DiamondMax 11 has big shoes to fill. If it weren't for one fatal flaw, this new drive would easily sit atop the 7200rpm performance podium.

The DiamondMax 11 feature set is very similar to the previous iteration of the drive, with two exceptions: The new drive has a SATA 3G interface and its areal density has been increased from 100GB per platter to 125GB per platter (it uses four platters). This areal density is superior to the five 100GB-platter setup used by the Hitachi 7K500, and equal to Seagate's 7200.9, which also uses four platters. The DiMax 11 drive sports NCQ, as well.

At first we fell in love with the new DiamondMax drive, but then we broke up when the drive had issues with our nForce4 test bench.

When we installed the drive, we ran into a major problem. Maxtor sent us two DiamondMax 11 drives for testing, and neither would work with our nForce4 test bench. Maxtor said it was a firmware issue, but rather than wait for a fix, we strapped the DiMax 11 to an Intel 955x mobo to check it out.

Once up and running, the DiamondMax 11's performance was impressive. It's the fastest 7200rpm drive in almost all of our benchmarks. The only exception is access times, which are more than 2ms slower than the advertised spec.

Just as we went to press, Maxtor sent us new firmware that resolved the nForce4 issues, but decreased performance. We saw the Application Index score drop from 30.3 to 26—a significant decrease. As it stands, we're taking a wait-and-see approach to this drive. It's fast as hell on the Intel platform, but still has issues with nForce4.

MAXTOR DIAMONDMAX 11

+ Blistering speed; huge capacity; quiet and cool.

− nForce4 issues and slow seek times.

6

$360, www.maxtor.com

SEAGATE 7200.9 BARRACUDA

Seagate's new flagship drive is a case of "one step forward, one step back" as it features an increased buffer size (now at 16MB) compared with the previous generation drive, but a lower areal density, if you can believe that. It features a four-platter configuration, so at 500GB this drive is running 125GB per platter. The previous-generation drive achieved a 400GB capacity with three platters, which equals 133GB per platter. The bizarre thing is we heard Seagate is offering a 160GB version of the 7200.9 that uses just a single platter. Why Seagate chose not to use its highest capacity platters in its flagship drive is beyond us. We do like that the drive can dynamically change its interface speed from SATA 150 to SATA 3G depending on the controller speed.

In testing, The 7200.9 is faster than its predecessor in nearly every measure of performance, except one: sequential read speed. Compared with the DiamondMax 11, though,

With its mediocre performance, the 7200.9's arrival is greeted with a yawn.

the Seagate simply gets "owned," to use the common vernacular. The disparity in performance between the two drives is surprising considering they share the exact same buffer size, platter density, and rotational velocity. While we wouldn't characterize this drive as "slow," its performance isn't impressive.

SEAGATE 7200.9 BARRACUDA

+ BIG ASS DRIVE: Huge capacity; five year warranty; quiet.

− BIG ASS: Not much faster than 7200.8; runs warm; slower than competition.

8

$350, www.seagate.com

BENCHMARKS

	SEAGATE	MAXTOR
HD TACH 3		
RANDOM ACCESS TIME (MS)	**13.3**	15.5
BURST RATE (MB/S)	248	**254**
AVG. SEQUENTIAL READ (MB/S)	52.5	**59**
H2BENCHW		
APPLICATION INDEX*	**27.4**	26
OTHER		
DOOM 3 LOADING (SEC)	39	**33**
5GB READ (SEC)	**111**	**111**
IOMETER 50 PERCENT RANDOM WORKLOAD (IO/SEC)	250	**267**
OPERATING TEMP WITH NO FAN**	59	**51**

*Best scores are bolded. *The application index is a real-world script of six applications. The score is based on the time it takes the drive to complete the scripts. **Hard drive temperatures measured using S.M.A.R.T. data, as reported by the Speedfan utility. All tests are run on our zero-point systems, unless otherwise noted.*

Copyrighted material

Toughpower 550W

Designed to Perform, Built to Last
The All-New Toughpower Series

Industrial Grade Components

High Voltage Regulation (+/- 3%)

Industrial Grade Main Components

High Reliability: MTBF > 120,000 hours

High Efficiency: > 80%

Industrial Grade Components

High Performance Heat-Sink

Independent Voltage Circuit & Superb Voltage Regulation for +3.3V, +5V, +12V

Silent 120mm Fan

Thermaltake Technology Co., Ltd.

www.thermaltake.com

Copyrighted material

Heatsink Hostility!

Totally awesome cooling—no fooling

Observing the CPU-cooling market is like watching FoodTV. All of the "chefs" use the same ingredients—a copper base, copper heat pipes, and aluminum or copper fins with a fan—yet they continually whip up wildly different configurations. This month we're testing coolers from Arctic Cooling and Raidmax, and to be honest, we haven't seen a pair this impressive since we watched *How the West Was Fun* with Mary Kate and Ashley Olsen.

—JOSH NOREM

The Pro version of the Freezer 64 uses an additional heat pipe, and has a few angled fins at its base to direct airflow to the caps and mosfets around the CPU socket.

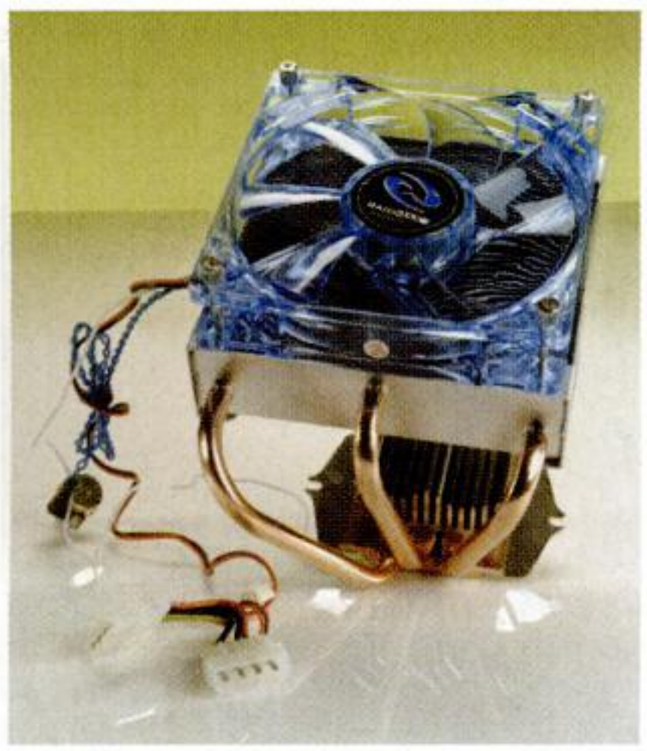
RAIDMAX GLACIER

This cooler's design is reminiscent of Thermalright's hugely popular XP-120, and it works just as well.

It consists of a copper base plate attached to three copper heat pipes. These long, thick heat pipes send their thermal payload into a large array of aluminum fins that overhang the processor area. The fins cover the entire region around the CPU socket, allowing the adjustable-speed 12cm fan mounted on top of the aluminum fins to cool both the CPU and all the capacitors and regulators around the CPU in the process.

Installation is relatively easy, but we must warn you, motherboard removal is required because the Glacier uses a thick, metal backplate to support its heft. The backplate is a pain in the ass, and shouldn't be necessary. Equally beefy Kick Ass coolers like Zalman's CNPS9500 LED (reviewed Holiday 2005) and the Freezer 64 Pro (reviewed on this page) use the stock AMD backplate and keep the CPU cooler than Vanilla Ice. Once you install the backplate, you attach the cooler using thumbscrews that you tighten by hand.

As the benchmarks show, the Glacier's performance is astounding. It's one of the coolest CPU coolers we've ever tested, even when compared with water-cooling kits. It's just a shame the installation is such a hassle—otherwise it'd be a great way to chill your proc.



The Raidmax Glacier's top-mounted 12cm fan is adjustable, and you can install a second 12cm fan below the fin apparatus, if you're so inclined.

RAIDMAX GLACIER

COPPER
Cools CPU and caps/mosfets, has no clearance issues, and sports an adjustable fan.

ROBBER
Motherboard removal required for installation.

8

$50, www.raidmax.com

ARCTIC COOLING FREEZER 64 PRO

If you follow our cooling reviews like a thermal groupie, you'll recall that so far this year we've awarded perfect 10/Kick Ass verdicts to the Cooler Master Hyper 6+ and the Zalman CNPS9500 LED.

Tough competition, for sure, and this month we'd like to add the Freezer 64 Pro to these lofty ranks. It cools just as well as both the Zalman and the Cooler Master coolers, yet it's easier to mount than either of them—and it's quieter than both. It loses a verdict point for not being universal, however.

The Freezer 64 Pro sports a typical copper heatsink/aluminum fin/fan config, but three snazzy features set it apart from the pack. First, the 8cm fan is mounted to rubber arms, so it floats in place. These arms absorb all of the fan's vibration and allow it to run in complete silence. It pushes 40CFM at 2200rpm. Second, the bottom-most fins are bent down in order to direct air towards the capacitors and voltage regulators around the CPU socket. Third, the cooler installs using the stock AMD backplate, with no tools required. It literally snaps onto the backplate in 10 seconds or less, and you're done.

During testing, the Freezer 64 Pro delivered cooling performance on par with both the aforementioned 10/Kick Ass products—it even trumped the Zalman by 1 C in one of our tests.

With its easy installation, scintillating performance, and dead-quiet operation, this CPU cooler reminds us of that movie *As Good As It Gets.*

ARCTIC COOLING FREEZER 64 PRO

FREEZER
It's cool and quiet, and can be installed in 10-seconds.

WHEEZER
Not universal.

9

MAXIMUM PC KICKASS

$34, www.arctic-cooling.com

BENCHMARKS

	STOCK COOLER	ARCTIC FREEZER	RAIDMAX GLACIER
IDLE (C)	40	33	**28**
100% LOAD (C)	54	44	**39**

Best scores are bolded. All temperatures were measured via the onboard sensors on our AMD-powered zero-point systems, using the Asus A.I. Booster utility. Idle temperatures were measured after 30 minutes of inactivity and full-load temps were achieved running CPU Burn-in for one hour

Copyrighted material

PC Pitstop

FREE

PCPitstop.com/Max

Try Optimize on this months Maximum CD

DIAGNOSTIC SCAN
TO SPEED UP YOUR COMPUTER

Based on millions of PCs analyzed at PC Pitstop

Over time, everyday use will diminish your PC's performance. Optimize is an exciting software program that will automatically diagnose your PC and give you a custom report detailing every issue that is hurting your PC's performance.

- **Energize Internet Speeds**
  Improve your Internet connection up to 200% by adjusting Windows Internet settings based on your connection type.
- **Revitalize System Performance**
  Increase your system performance by tweaking several critical Windows settings.
- **Eliminate Registry Errors**
  Remove erroneous and leftover registry entries created by viruses, spyware, and incorrect program removal.
- **Maximize Hard Drive Space**
  Find and remove unnecessary and temporary files, making your drive run even faster.

Run your free scan now: PCPitstop.com/Max

OPTIMIZE
Speed Up Your Computer

Copyrighted material

Canon EOS 5D

Full-frame digital photography finally gets cheap(er) with the 12.8 megapixel EOS 5D

Look into the viewfinder of a consumer-grade digital SLR and you'll notice a startling difference compared with a film camera and the same lens: Your view is cropped, in much the same way black bars crop a widescreen movie to fit an older TV.

Those black bars are gone with Canon's breakthrough 12.8MP EOS 5D camera, the first semi-affordable full-frame digital SLR. Peer through the beautifully bright viewfinder of the 5D and you'll be stunned by how much of the image you've been missing with your run-of-the-mill SLR.

That "black bar" effect is due to the size of the camera's image sensor. While a normal frame of film is roughly 36x24mm in size, the average consumer digital SLR, such as Canon's EOS 20D or Rebel XT, features a sensor that's about 22.5x15mm. The smaller sensors in these cameras, in effect, turn a "normal" 50mm lens into an 80mm telephoto. An ultra-wide angle 20mm lens is equivalent to an average 32mm lens.

Why doesn't everybody use a full-frame sensor? The problem is cost. The larger the sensor, the lower the yield. The lower the yield, the more it costs. That's the breakthrough with the 5D. While a $3,300 street price sounds steep, the company's first full-frame camera cost $8,000 in 2003.

To lower the price, Canon cut out pro features such as weather resistance and a more advanced auto-focus system. That doesn't mean the 5D is a featherweight that'll short out on a humid day. In fact, the magnesium alloy body feels more solid than the EOS 20D body and should survive light rains or mist just fine. Just don't expect to cover a hurricane with it.

Even without pro-level auto focus, the 5D is still improved over the 20D. Focus response is snappy and accurate, even in low-light conditions. We also like the diminutive size of the 5D compared with the huge pro bodies that scream "rob me at knife point, please." Given its three-frames-per-second capture rate, the 5D isn't intended as a sports camera, but its deep buffer of 60 JPEG or 17 RAW files, and fast write times to Compact Flash cards mean you'll likely never wait for a shot.

We compared the 12.8MP 5D to an 8.2MP EOS 20D and Nikon's 12.4MP Nikon D2X. In low-light conditions, the 5D's high ISO performance is stunning. At 1600 ISO, it outclasses the 20D, which was the previous benchmark for low noise, or "grain." Thanks to improved noise algorithms, and a sensor that isn't as crowded with pixels as the smaller sensors in the D2X and 20D, the 5D is the new camera to beat for low-light photography. In resolution, as expected, there's no discernible difference between the D2X and the 5D, but both offer a bit more detail than the 20D's 8.2MP.

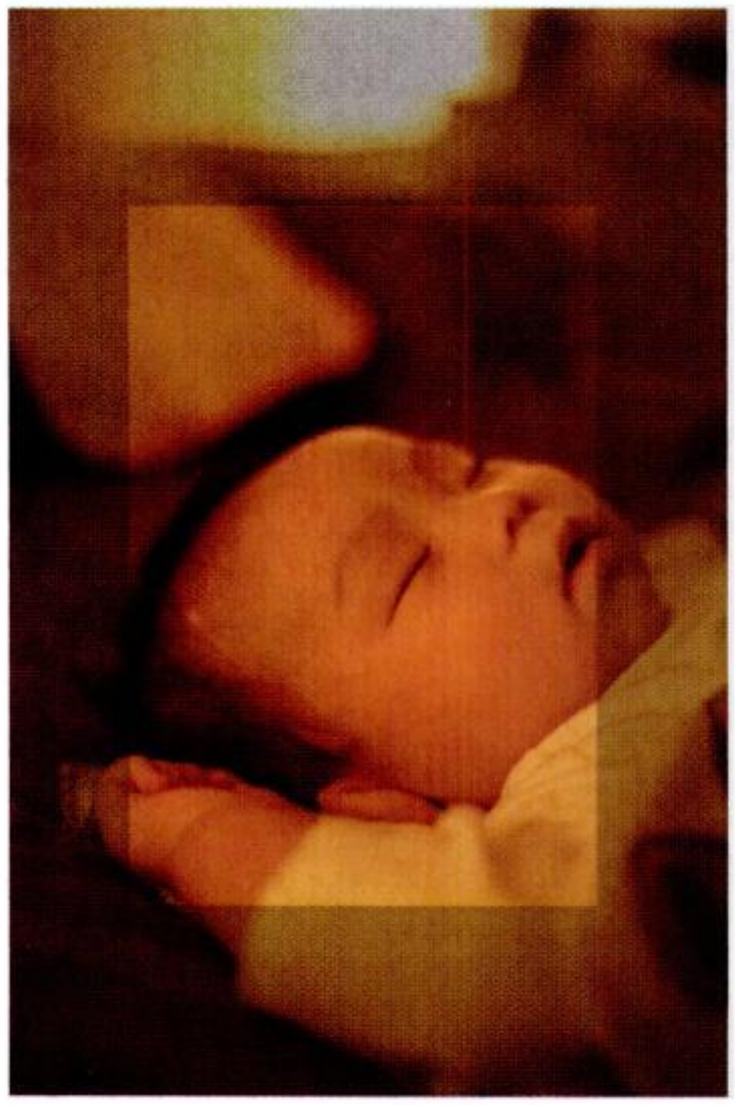
Is the 5D right for you? As any photographer will tell you, a camera is just a tool, and you pick the right tool for the job. The 5D is the tool for landscape, wedding, studio, or street photography, but not the best tool for sports or action shoots.

We give Canon kudos for getting a full-frame sensor into the hands of serious amateurs, but Canon isn't demonstrating the zany, out-of-the-box thinking that Nikon has with its D2X, which features an even more "cropped" mode to increase the frame rate from 5fps to 8fps at the cost of resolution.

Still, hold the 5D up to your eyeball, and you'll have a hard time looking through the viewfinder of a cropped camera again.

—GORDON MAH UNG

The EOS 5D features a huge, 60-image buffer and a magnificent 2.5-inch LCD for reviewing images.



The lighter box in the middle of the image shows you where most consumer-grade digital SLRs "crop" the image you would get with a 35mm film camera—or Canon's 5D.

SPECS

AF SYSTEM	Nine AF points with six hidden assists from -5 EV to 18 EV
METERING	35-segment evaluative, center weighted, partial, and spot
ISO RANGE	50-3200
SHUTTER SPEEDS	Bulb – 1/8000
FLASH SYNC	1/200
FRAME RATE	3fps for 60 JPG or 17 RAW
STORAGE	Compact Flash Type I and Type II

CANON EOS 5D

+ HENRI CARTIER-BRESSON

Butter-smooth images in low light, no crop factor, and a huge LCD.

– CARTER COUNTRY

Soft-touch shutter release feels mushy and viewfinder info is skimpy.

9

$3,300, www.canon.com

Copyrighted material

Why should we continue to carry men's baggage?

The Madison

The Milano

Luckily we don't have to anymore! The age of masculine, boring and bland computer bags is over!

Mobile Edge is a designer of elegant computer carrying cases that address a woman's needs. Designed by women for women, these fashionable bags will protect and carry your computer in style!

View the entire collection at www.mobileedge.com or call 714.399.1400 for more information. You may also visit the following retailers and ask for Mobile Edge by name

Komen Paris Backpack

Chocolate Suede Tote

Free UPS Ground Shipping for a Limited Time!
Use Coupon Code:
MEMAX

BEST BUY · Fry's Electronics · J&R Music World Computer World · DataVision

©2004 Mobile Edge, Inc. All trademarks and register marks are the property of their respective owners. All rights reserved.

Laptop Backpacks / Briefcases / Messenger Bags / Totes

MOBILE EDGE

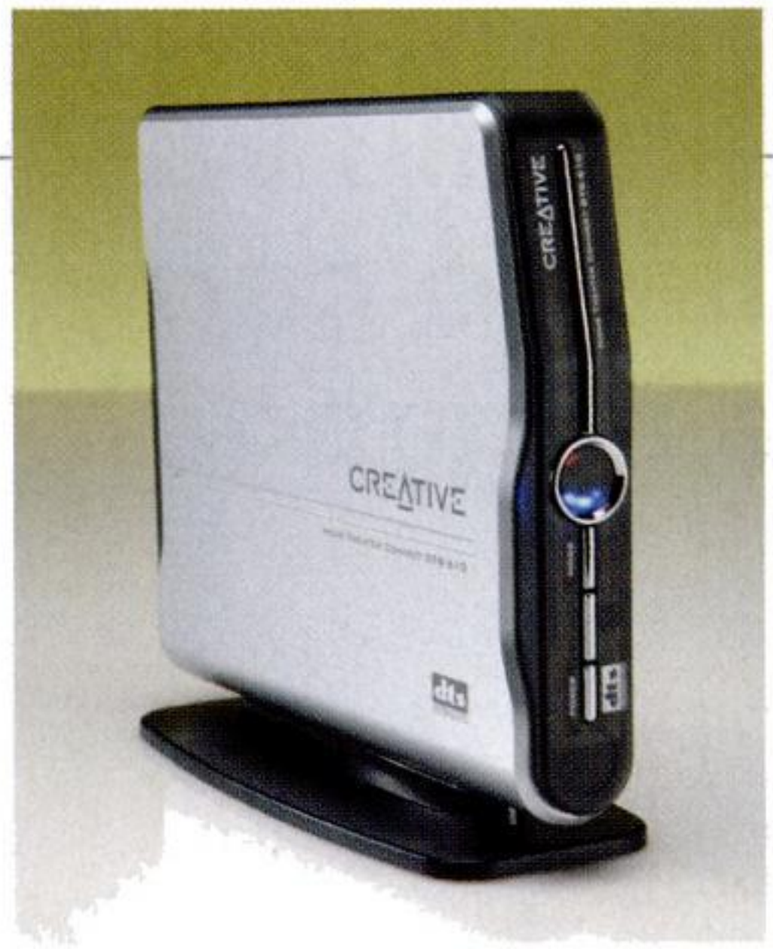
Bring It On.

www.mobileedge.com

Copyrighted material

Creative Home Theater Connect DTS-610

Finally, a solution for two common audio problems



You'll either be ecstatic that Creative Labs has introduced the DTS-610 encoder, or you won't give a rip—there's no in-between.

Thanks to digital-rights-management issues, some types of surround sound can be routed to your A/V receiver only in the analog domain. And surround-sound game audio (uncompressed PCM) can't be sent to your A/V receiver at all unless the receiver has six discrete analog inputs.

The game-audio issue is an understandable matter of limited bandwidth, but if your computer has a digital-audio output and your A/V receiver has a digital-audio input, you should be able connect the two using a simple cable. But in an effort to foil intellectual-property pirates, publishers will only allow DVD-Audio, Super Audio CD, and some purchased MP3 content to be carried outside the playback device only in the analog domain.

Most people don't realize these limitations until they set about integrating a computer into their home theater—and this is the DTS-610's *raison d'être*. The device provides three 1/8-inch analog stereo inputs that match the analog outputs on a surround-sound soundcard. Incoming audio is digitized and encoded in 5.1-channel surround sound using the DTS codec, and then output to your choice of optical or coaxial SPDIF. The box also features a digital pass-through: It accepts a digital stream at its coax input and routes the stream to its optical output—and vice versa.

SPECS

ANALOG AUDIO INPUT	3 1/8-inch stereo
DIGITAL AUDIO INPUT	Optical SPDIF Coaxial SPDIF
DIGITAL AUDIO OUTPUT	Optical SPDIF Coaxial SPDIF
ENCODING FORMAT	DTS Interactive

The DTS-610 doesn't require anything of the host PC, so we didn't see any performance hit. Even better, we tested the DTS-610 with a Creative Labs X-Fi soundcard and Logitech's Z-5500 Digital speaker system and were unable to detect any difference in quality between that card's decoded analog audio and the freshly encoded digital audio emerging from the DTS-610. The less-than-50ms latency was equally undetectable.

The DTS-610 does a great job of filling a very narrow niche: It's just the ticket for folks who want to integrate a PC into their home-theater system in which analog surround-sound inputs are either missing or already occupied. Other than that, it's just not very interesting.

—MICHAEL BROWN

CREATIVE CONNECT DTS-610 **8**

$100, www.creative.com

Xbox 360 Controller

A solid PC gamepad with a tremendous upside

The fancy green button might not do anything, but the Xbox 360 controller is still a solid PC gamepad.

Are you fed up with Xbox 360 owners waxing poetic about their new controller—how durable it is, how comfortable it is, how much better it is than a PC gamepad? Well, now you can shut 'em up by buying an Xbox 360 controller for your PC.

The Xbox 360 controller uses a standard USB connection, so the corded version is compatible with both the Xbox 360 and the PC. (An Xbox 360 Controller for Windows version is identical to the standard controller in every way, except it includes a driver disc in the package, and costs $5 more at Best Buy—you don't need this disc, you can download the drivers via Windows Update.)

If you own a 360 and play PC games, the benefits are obvious: You can use one controller for both platforms—you don't have to fool with different control layouts. Even if you don't have a 360, the news is good: All upcoming gamepad-friendly PC games are required to support the 360 controller to get the "Games for Windows" sticker on their box. This means you won't have to remap button functions for any Windows-branded game you play.

The Xbox 360 controller is comfortable to hold and the buttons are well-placed, even for our clumsy mitts. You get twin analog thumbsticks, a d-pad, and 10 buttons, including four triggers, two of which are analog. The two analogs are notable, as you can use them to, say, make tiny adjustments to speed and braking in *Need for Speed: Most Wanted*. The controller also features force-feedback vibration and a port that accepts a standard PC or Xbox headset, for voice-chat in games.

The Xbox 360 controller is expensive, especially when you consider that you can't program its buttons to perform macros. But it's a very solid PC gamepad, the headset compatibility is a plus, and it has enormous potential to make gaming on the PC much easier down the road.

—STEVE KLETT

XBOX 360 CONTROLLER **8**

$40, www.microsoft.com

Copyrighted material

THE 2006 MAXIMUM PC DREAM MACHINE TOUR!

- *Check out the effect AMD's FX has on your game play!*
- *Connect to the Wi-Fi® hotspot, fueled by Broadcom® 54g™, and enter to win a complete game package including all nine games featured on the DMT!*
- *Preview Battlefield 2, Blitzkrieg 2, Civilization IV, Divided Nation, Hammer & Sickle, LOTR: Battle For Middle-Earth II, Rise & Fall, Serious Sam II, and War Front!*

TOUR DATES

November 9 - 13, 2005
New York, NY
Loews Lincoln Square 12

Nov 25 - Dec 24, 2005
San Francisco, CA
Sony Metreon

January 11 - 15, 2006
Dallas, TX
Keystone Park Theatre

January 18 - 22, 2006
Tucson, AZ
Foothills Theatre

January 25 - 29, 2006
Los Angeles, CA
Marina Del Ray Theatre

February 1 - 5, 2006
Seattle, WA
Alderwood Theatre

February 15 - 19, 2006
Chicago, IL
600 N. Michigan Theatre

February 22 - 26, 2006
Boston, MA
Boston Common Theatre

SPONSORED BY

AMD · Battlefield 2 · Sid Meier's Civilization IV · DELL · hard drive by HITACHI · newegg.com · TYAN · Rise & Fall: Civilizations at War · American Conquest: Divided Nation · ATi · Blitzkrieg 2 · Broadcom · Hammer & Sickle · The Lord of the Rings: The Battle for Middle-earth II · War Front: Turning Point · netcell · Serious Sam II · 2board

www.maximumpc.com

Copyrighted material

Two Cases, in Your Faces!

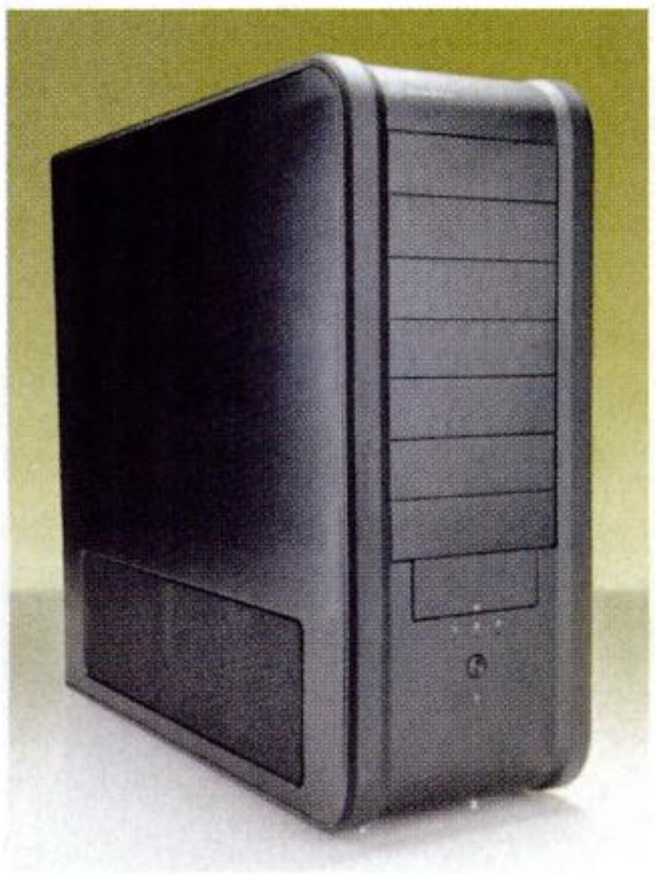
Good things come in both small and big packages

The massive Silverstone TJ07 has undergone several revisions since the pre-production version we used in our 2005 Dream Machine, and we can now render our verdict on the final product. If a case the size of a big-boned 4-year-old isn't your style, there's always Antec's new silent mid-tower, the P150. Whatever your fancy, one of these cases is sure to tickle it.

—JOSH NOREM

SILVERSTONE TJ07

Actually, our history with the TJ07 spans back to its predecessor the TJ03, which itself housed the components of our 2004 Dream Machine. We had few complaints with the TJ03 back then, but we're thrilled to report that the TJ07 surpasses its predecessor in every way possible.



Is this the most beautiful case you've ever seen, or what? The Silverstone TJ07's top, bottom, and bezel are made from a single piece of aluminum.

The most improved aspect of this case's design is its reverse-ATX formfactor, which features a separate lower chamber for hard drives and power supplies (yes, it accepts *two* PSUs). The reverse-ATX formfactor is becoming very popular, but Silverstone's design is better than that of any other manufacturer. We love the huge, gaping hole that divides the lower and upper chambers. It provides ample room for routing power and data cables between compartments. We did encounter a slight snag, however—our four-pin 12V ATX power connector had to be stretched banjo-string tight to get from the bottom of the case to the top of the mobo.

Two hard drive cages are included, each with a 12cm fan. The cages hold three drives apiece and are easy to install and remove. Our only gripes are that the solid-aluminum construction of the cages amplifies drive noise considerably, and you have to remove both case doors to remove a drive cage. Still, the six-drive capacity is awesome and the slow-spinning 12cm fans offer more-than-sufficient cooling.

Cooling throughout the case is abundant, with two 9.2cm exhaust fans in the back and two 12cm exhausts on top of the case. With its six included case fans (four exhaust, and one for each drive cage) the TJ07 is breezy, to be sure, but the fans are virtually silent in operation. The TJ07 also includes a removable motherboard tray and front-mounted USB/FireWire and audio.

While the TJ07 doesn't have any fancy features, extra doo-dads, or even LED fans, we love it nonetheless. It holds a *ton* of hardware, cools all of it efficiently, and is supremely easy to work in. It's even more aesthetically pleasing than the CM Stacker 830 that we reviewed last month, and as such, it's our new favorite full-size enclosure.

SILVERSTONE TJ07

+ FULL TOWER
Massive case, ample cooling, drop-dead gorgeous, and sturdy.

– FULL TUMMY
Must remove both doors to remove drive cages.

9

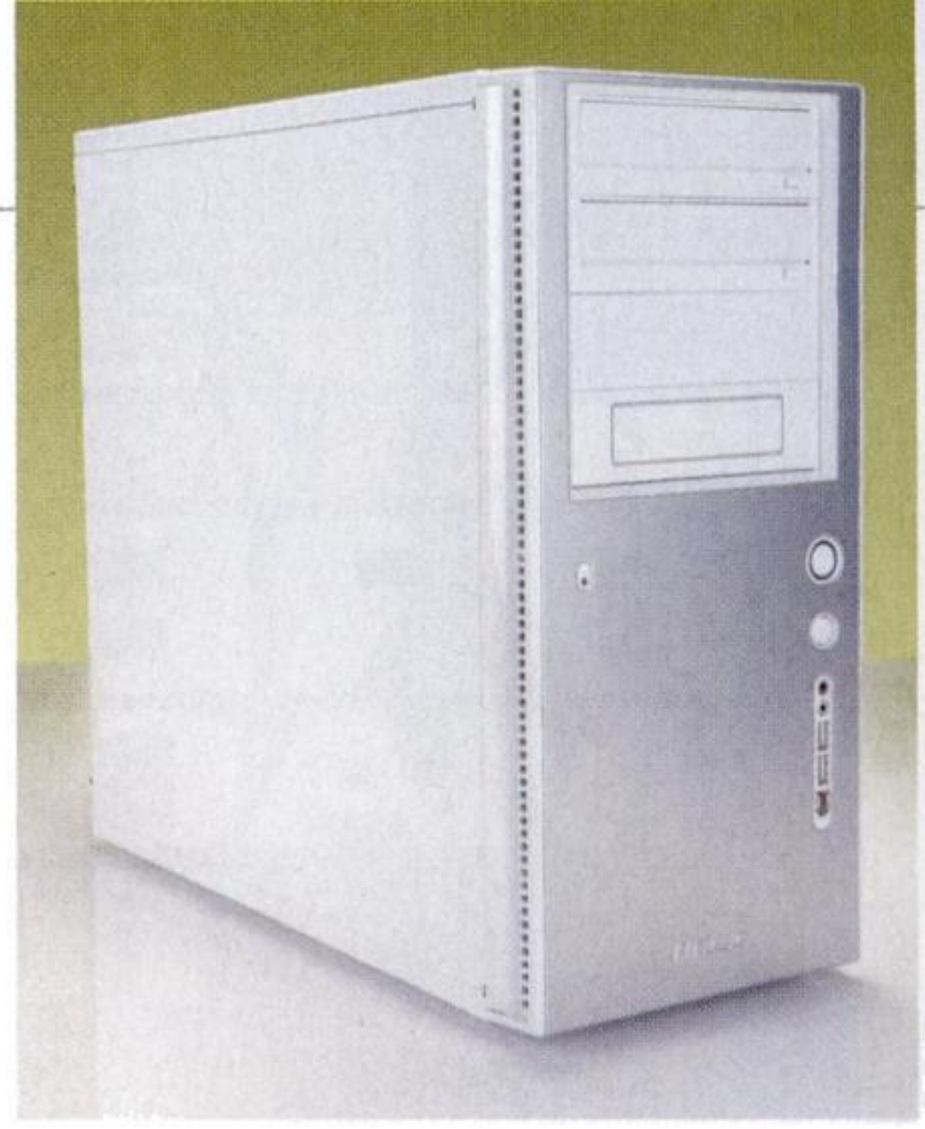
MAXIMUM PC KICKASS

$330, www.silverstonetek.com

ANTEC P150

Hot on the heels of the super-quiet P180 comes its little baby brother, the P150. Although we're not big fans of the all-white iMac aesthetic, we dig that this case is near-silent and brimming with cool new features.

The P150 is a "quiet" case, thanks to several features designed to shut a PC's pie hole.



Antec's new P150 is the first case we've seen to offer thick rubber bands as a silent hard drive mounting option. And they work splendidly.

The case has just one 12cm exhaust fan—an adjustable Antec TriCool that you manually set to one of three speeds. It also includes two different ways to mount your hard drives. You can either mount drives on slide out bays that use thick silicone grommets, or—get this—remove the bays entirely and suspend the hard drives between thick rubber bands. The drives we mounted between said bands stayed in place and were totally silent—no clicks whatsoever.

The top two optical drive slots have spring-loaded covers that pop open when you eject the drive tray, but the flaps get stuck on the tray when it's retracting. The flaps are also flimsy; we inadvertently broke one just taking the case out of the box.

We love that Antec includes hooks to use as cable runs, on the backside of the 3.5-inch drive cage, but less-flimsy clamps would have been preferable.

Our only other complaint is with the P150's diminutive size. The motherboard edges are flush with the 3.5-inch drive cages, and the interior is quite cramped. Still, we love the included 430W silent PSU, and the P150's quiet operation.

ANTEC P150

+ WHITE CASE
Silent; slick hard drive cages; solid build.

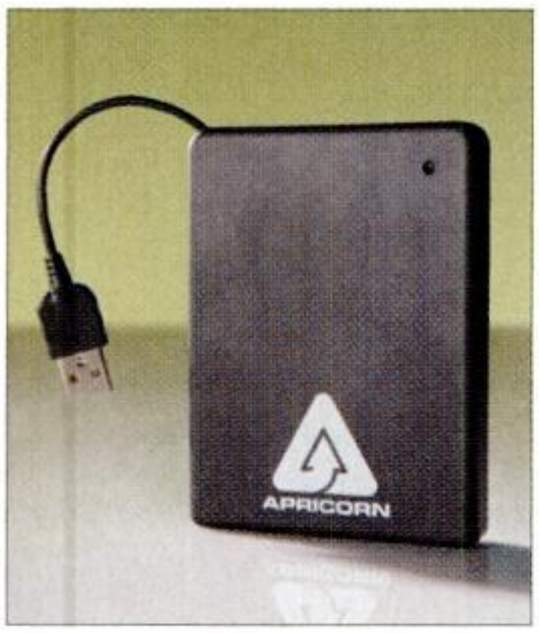
– WHITE PHOSPHOROUS
Cramped; li'l pricey; wonky optical drive covers.

8

$140, www.antec.com

Copyrighted material

PORTABLE DRIVE



Apricorn EZ Bus Mini

The EZ Bus Mini is a slick little drive that sacrifices fancy-pants styling for cold, hard functionality. Its outer shell is made of hard rubber in order to keep the 40GB Hitachi Travelstar drive within safe from harm, and the USB 2.0 cable tucks into a recessed channel on the back of the drive, so it's out of sight and not flopping about during transport. The USB cable is very short, so it's a good thing Apricorn includes a 12-inch extension cable.

The Travelstar inside the rubberized enclosure is a wee 1.8-inch hard drive. This particular model has two platters that hold a total of 40GB of data, but 20GB and 60GB versions are also available. All are bus-powered, meaning they suck juice from the USB teat and therefore don't require an external power brick. These little 1.8-inch drives aren't the fastest drives around, but they're fast enough for this drive's purposes—backing up files and copying data from your home PC to your work rig.

The real bonus with this drive is the sublime software bundle, which includes a backup utility, drive-imaging software, and an encryption tool. Unfortunately, the encryption software can only encrypt 20MB—you have to upgrade to the Pro version to protect more data. The drive-imaging utility is also of little value for those with high-capacity hard drives because the EZ Bus Mini only holds 40GB of data.

Though it's a bit pricey, the EZ Bus Mini does everything a portable drive needs to do, and does it well.

—JOSH NOREM

APRICORN EZ BUS MINI **8**

$230, www.apricorn.com

EARPHONES

Shure E4g

We've panned many noise-canceling headphones that mask noise from the outside world by generating noise of their own. Shure has a much better solution: Its E4g earphones plug your ear canal and block outside noise. Even better, they sound fabulous.

Rock stars who use Shure's earphones to monitor their on-stage performance benefit from a custom fitting. Consumers have to settle for Shure's "fit kits," which contain plugs in enough shapes, sizes, and materials that anyone should be able to find a pair that's comfortable. Push the plug onto the stem of the earphone, insert the bud in your ear canal, and the outside world all but disappears.

Finding just the right plugs is crucial to getting the most out of the E4g phones, a conclusion we arrived at while playing *Call of Duty 2*. The wrong plugs can be uncomfortable after extended wear, or they can slide out of position. Reseating them while listening to music is no big deal, but taking your hands off the keyboard in the middle of a firefight can be disastrous.

Once we'd found just the right set, we conducted several more hours of testing with a variety of audio CDs and games. The E4g earphones sound brighter than many headphones we've tested, but that doesn't mean they don't produce adequate bass (if your soundcard offers a "headphone" setting that can boost the low end, we definitely recommend using it). Listening to Primus' *Pork Soda* audio CD, we were particularly impressed with how adeptly these tiny earphones delivered the shredding cello solo from "Mr. Krinkle."

The E4g earphones are incredibly comfortable, surprisingly effective at cutting outside noise, and capable of delivering delectable audio. We highly recommend them.

—MICHAEL BROWN

SHURE E4G **9**

$300, www.shure.com

MAXIMUM PC KICKASS

HEADPHONE AMP

Boostaroo Revolution

For many people, portable audio devices such as MP3 players and handheld gaming devices just don't deliver enough oomph. We're talking volume, people! If you're in that crowd, give the Boostaroo Revolution an audition.

But first, make sure your headphones are a good match. The manufacturer tells us the amp is recommended for "high-end" headphones rated at between 60 and 300 ohms impedance. But we know plenty of high-end headphones that have much lower impedance ratings, including the $300 Shure E4g earphones reviewed on this page. Those units are rated at 29 ohms, and when we paired them with the Revolution, the overdriven earphones produced a lot of distortion.

When we connected the tiny amp to headphones that did fall within the recommended range, it sounded great, delivering a boost in volume ranging from pleasant to intolerable, despite being powered by just two AAAA batteries. And if you enjoy sharing your music with a close companion, the Revolution will drive two pairs of headphones by splitting the incoming stereo signal into two discrete stereo signals and delivering them to separate 1/8-inch outputs.

Oddly enough, there's no on/off switch—plugging in the input cable turns the amp on even if the other end of the cable isn't plugged into anything (a red LED glows to remind you it's on). Audio purists, meanwhile, will be put off by the manner in which the Revolution reprocesses stereo signals into pseudo surround-sound to widen the sound field, a feature you cannot turn off. If neither of those characteristics bother you, and your headphones have the correct impedance, the Revolution is a worthwhile purchase.

—MICHAEL BROWN

BOOSTAROO REVOLUTION **7**

$80, www.upbeataudio.com

Copyrighted material

Stubbs the Zombie

Finally, it's time to eat braaaaaaaaaains

Tired of fighting zombies? If you play *Stubbs the Zombie*, you too can eat some tasty brains and fight the human menace!

Killing zombies is one of the staples of the first-person-shooter genre. And quite frankly, we're a little sick of it. We'd much rather fight smarter, more challenging opponents. The typical Romero-style shambling zombie just doesn't make a compelling opponent anymore.

But *playing* as a shambling, Romero-style undead is a whole other story. In *Stubbs the Zombie* you play as the so-named character, doing the traditional zombie shuffle across a variety of weird 1950s-utopia environments, noshing on brains, overpowering citizens with your flatulence, and chucking "gut grenades" at anyone who gets in your way. A few seconds after you kill any of the humans, they return from the dead and begin their own attack on the living.

***Stubbs'* reliance on melee attacks makes for a different experience than most shooters offer. Instead of using cover and taking shots when it's safe to do so, you'll need to stumble through the middle of firefights, using your minions as undead shields, until you're close enough to grab and gnaw on your victims. This is exactly the type of behavior that would get you constantly killed in a more traditional shooter.**

To mix it up a bit, Stubbs has the ability to remove his hand, and to possess normal humans by attaching the appendage to one's head. Crawling around the environment on five fingers is surprisingly fun, and picking just the right person to possess can be tricky. Each human has a particular weapon, ranging from pistols, to single-shot rifles, to ray guns. Is it better to control the guy with the bazooka or the guy with the sniper rifle? Using the living does have a downside—humans that you kill with a gun don't return to life, and therefore don't add to the zombie horde you rely on for your protection.

Detracting from *Stubbs'* novel gameplay are the game's low-res environments—the buildings, lawns, and even roads are flat and unexciting. We also wish we could have given our zombies more direction, even something as simple as pointing to a location and having them go there would have been better than the frustrating try-to-push-them-in-the-right-direction minigame.

—WILL SMITH

STUBBS THE ZOMBIE **7**

$40, www.stubbsthezombie.com, ESRB: M

Battlefield 2: Special Forces

Great maps, but not very special otherwise

The *Special Forces* expansion offers eight killer maps, but the new features and vehicles—including the night-vision goggles and ATVs seen here—are underwhelming.

The new *BF2* expansion pack delivers on its promise of making an awesome game even awesomer. That is, if you can put up with the hassles typically associated with the launch of any *Battlefield* product—some stuff just ain't right the first few weeks after release.

The expansion is all about Special Forces combat, so instead of it just being the USMC against the MEC, this time around you play as part of the Navy Seals, British SAS, Russian Spetnaz, and other elite units. The problem is that all the changes seem like window dressing, without any real substance. While everything looks new, the weapons and vehicles all feel exactly the same as regular *BF2*.

That said, there are a few new features that are *very* cool. Some classes have flashbang grenades or tear gas, which give you a huge edge in combat. There is also a grappling hook that can be used to scale buildings, and a zip line to descend from rooftops. These tools are rarely necessary, and using them leaves you open to attack, but a team that takes advantage of them can do serious damage. Gas masks and night-vision goggles are now standard equipment for all classes as well. The gas mask is mostly unnecessary, but some night maps require use of the night-vision goggles.

Which brings us to the really good part: The eight included maps are outstanding. Several are very Karkan-like, featuring up-close urban combat. The others include smaller maps that encourage close-quarters combat, and three new battles that occur at night, requiring the use of different tactics. Operating in darkness requires a lot of stealth and strategy, and is easily the most rewarding (and fun) new feature in the expansion pack.

Unfortunately, there are some weird installation issues. Installing the expansion pack rolls back *BF2* to version 1.1, even if you have 1.12 installed, so you have to reinstall the patch. People have also reported some instability issues, which we experienced on one of our test machines, but not on another virtually identical PC.

The new maps alone justify the cost of the expansion, but unless you're a hardcore *Battlefield 2* player, you probably won't miss anything if you pass on this pack.

—JOSH NOREM

BF 2: SPECIAL FORCES **7**

$30, www.battlefield2.ea.com, ESRB: T

Copyrighted material

Every thing you need to know about your starlets can be seen in the pop-up radial menus. Micromanagers, rejoice!

The Movies

Keep your starlets off the sauce while you make your own machinima

The Movies represents a concept so astounding that we didn't think it could possibly work. Take the fun people-management aspects of *The Sims,* then use those people to create movies by hiring them as actors, directors, crew members, and even janitors. There's a twist, though.

Not only do you have to *manage* the creation of the movies, keeping all the "little people" happy and working hard, but you actually script, direct, edit, and do post-production work on the films you create. So, in addition to being a *Sims*-esque game, *The Movies* is a machinima-making sandbox—you can use it to make your own in-game films!

Most of your time in-game will be spent managing your talent. Getting the right stars to the right sets, keeping them happy using perks like trailers and fancy new wardrobes, and then deciding when it's time to cut them loose. You'll need to constantly be on the lookout for new talent, and keep a close eye on your existing stars' foibles—if they get problematic food or alcohol addictions, you'll have to send them to rehab, or give them the axe.

Making a movie goes something like this: First, your scriptwriters make a first pass on one of five main genres—comedy, action, sci-fi, horror, or romance. Then you can add to, shorten, or otherwise tweak the locations or action of the basic script the scriptwriters delivered. Once that's done, you'll need to cast your film, selecting a director and stars to fill key roles. When it's time for shooting to start, your entire cast moves to the appropriate set, where filming commences. You can even give the actors direction during this stage by taking over for the director. Once all the scenes have been shot, you'll need to enter post-production, where you'll add special effects, titles, and even your own voice-overs! Once that's done, you can release your film, and see how the critics (and audience) enjoy it.

It's great that the game works, but we would have preferred a little less micromanagement and a little more movie-making.

—WILL SMITH

THE MOVIES

ALIENS

Build your own machinima, with a *Sims*-ian twist. Well-executed and fun!

AVP

Keeping 20 stars happy is a nightmare.

9

$50, www.themoviesgame.com, ESRB: T

Available At:
TigerDirect.com
CALL 888-844-3797
Please Mention Code:
MMAXPC0206

Gaming

NEW!

G15 Gaming Keyboard
The tilting, backlit GamePanel™ display lets you keep tabs on messages, view game status and monitor many types of system information—all while you're still in the game.
L23-7074 G15 Gaming Keyboard $79.99

Logitech

G7 Laser Cordless Mouse
delivers extreme cordless performance with a 2000 dpi laser engine for blinding speed and precision response.

L23-7054 G7 Cordless Laser Mouse $79.99
L23-7046 G5 Laser Mouse (corded) $54.99

Audio

Z-5500 Speakers —
We've taken the award-winning Logitech Z-680 speaker system and made it even better. How? By improving everything from the subwoofer to the satellites and adding new innovations like real-time digital sound equalization. The result is the Logitech Z-5500 Digital, a THX-certified, 500-watt 5.1 surround sound speaker system that offers everything you could possibly want... and some things you didn't even know you needed. And once you plug in your PC, DVD or music player, or video game console, you'll never want to listen to anything else.
L23-6334 Z-5500 Speakers $219.99

Eliminate the clutter of rear speaker wires! The Logitech Z-5450 digital speaker package includes dual wireless rear speakers for simple, clutter-free installation. Satellite speaker stands rotate for easy wall mounting.
L23-7076 Z-5450 Digital Speakers $349.99

LEAVE YOUR MARK
ON TODAY'S GAMING ARENAS

ABS® Machines are built from the ground up with only the most severely battle-tested components! Each system is precision tuned by experienced ABS® Engineers to give you the bone-shattering performance you crave. Make your mark today at www.abs.com!

ULTIMATE M6 SNIPER

*ABS® Stealth Chassis pictured

Online Price

$1599

2X

featuring NVIDIA® SLI™ TECHNOLOGY

USE PROMO CODE: **mxpc02**

FOR AN EXTRA **$50 OFF!**

Ultimate M6 Sniper or Mayhem G3 Eclipse

(online only. expires 02/28/06)

THE COMPONENTS

- AMD Athlon™ 64 processor 3500+* with HyperTransport™ technology
  Make the smart choice with AMD64 technology
- Microsoft® Windows® XP Home Edition with Service Pack 2
- ASUS A8N-SLI Premium NVIDIA nForce4 SLI Motherboard
- 1024MB Corsair XMS Xtra-Low Latency PC3200 DDR Memory
- Dual NVIDIA® GeForce™ 6600 GT 128MB Video Cards with SLI™ Technology Enabled
- Realtek ALC850 8-Channel On-Board Audio
- 160GB 7200RPM SATA Hard Drive
- Antec True 550W Power Supply for Extreme Power Reliability
- 16X DVD-ROM Drive
- 16X Double-Layer DVD+/-RW DVD Recordable Drive
- 1 Year 24/7 Tech Support & Onsite Service (Concurrent with Standard Warranty)

* This model number indicates relative software performance among this processor family.

LEADING EDGE PERFORMANCE ON TODAY AND TOMORROW'S SOFTWARE

- Provides leading-edge 32-bit performance for music, video, and games and is ready for future 64-bit software
- Improves security against certain types of viruses, with Enhanced Virus Protection for Microsoft® Windows® XP SP2
- Conserves power and operates quietly with AMD Cool'n'Quiet™ technology
- Features HyperTransport™ technology for improved multitasking performance

ABS® AWARDS

April 2005 — MAXIMUM PC VERDICT 9 — Ultimate M6

June 2005 — Mayhem G5

November 2005 — PC WORLD TOP15 DESKTOP PCs — Ultimate M6

Copyrighted material

ABS® Recommends Microsoft® Windows® XP

MAYHEM G3 eclipse

Online Price

$1399

YOU SAVE $100!

Regular Price ~~$1499~~

THE COMPONENTS

- AMD Turion™ 64 Mobile Technology MT-32*
  AMD PowerNow!™ Technology
  HyperTransport™ Technology
  Enhanced Virus Protection
- Microsoft® Windows® XP Home Edition with Service Pack 2
- Kingston 512MB DDR333 SODIMM Memory
- ATI® Mobility™ Radeon® X700 graphics with 128MB VRAM
- 60GB 5400RPM Hard Drive with 16MB Cache
- DVD Dual layer Burner Drive (DVD±R, DVD±RW, DVD±RDL)
- 15.4" WXGA (1280x800) TFT Anti-glare Screen
- Mini PCI Wireless Adapter IEEE 802.11a/b/g
- 3-in-1 Card Reader (SD, MMC, MS)
- 1 Year 24/7 Tech Support & Onsite Service (Concurrent with Standard Warranty)

* This model number indicates relative software performance among this processor family.

AMD Turion™ 64 mobile technology delivers leading-edge 32-bit performance today, and can also run tomorrow's 64-bit applications, so your games and multi-media applications load faster and run smoother.

- Notebooks based on AMD Turion™ 64 mobile technology give you the freedom to work, relax, and play almost anywhere or anytime
- The perfect combination of speed, size and power efficiency
- Enjoy mobile performance made for the ultimate, on-the-go lifestyle
- 3DNow!™ Professional technology enables stellar performance and playback quality on digital entertainment features such as games, streaming audio and video, DVDs, and music

QUEST

Visit www.abs.com and see the Interactive "Quest" Comic, starring ABS' own Alexia.

www.abs.com

abs®

- 1 Year Limited Parts & Labor Warranty
- Hours: Mon-Fri 8:30AM-5:30PM PST

or call **800.876.8088**

Price, specifications and terms are subject to change without notice. For current pricing and specifications, visit http://www.abs.com. Illustrations may not accurately represent exact configurations priced. ABS® is not responsible for errors in typography and/or photography. Onsite service may be provided by a contracted third party provider. Technician will be dispatched if necessary following phone support. © 2005 All rights reserved. AMD, AMD Arrow logo, AMD Athlon, AMD Turion, Cool'n'Quiet and combinations thereof are trademarks of Advanced Micro Devices. HyperTransport is a licensed trademark of the HyperTransport Technology Consortium. Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and other jurisdictions. Other products and company names are for identification purposes only and may be trademarks of their respective companies. ABS logo and all ABS trademarks are copyright ABS Computer Technologies, Inc.

Copyrighted material

AVOX Jukebox

VANTEC

make your media as mobile as you are

A Portable Media Player

The AVOX Jukebox is the easiest way to turn your 2.5" hard drive into a portable audio/video player. With a simple to use ON SCREEN DISPLAY, the AVOX Jukebox can play movies, music, or a slideshow of your pictures when connected to the AV inputs on any television. Since it also doubles as a portable enclosure, you can store your documents, programs, or any other data on the AVOX Jukebox as well. With the built-in high speed USB 2.0 interface, files can be transfer up to 40 times faster than USB 1.1. Easy to use, sleek, and compact, the AVOX Jukebox is the perfect way to make your media as mobile as you are.

MOVIE
MUSIC
PHOTO
STORAGE

where to buy

DIRECTRON.COM Computer Super Store
Fry's Electronics Outpost.com
newegg.com
PCMall Great technology, Great advice, Great price!
TigerDirect.com
ZipZoomfly.com

[H]ard|OCP 9.5 / 10

Hi-Tech Reviews.com Award of Excellence

KICKASS gameman's choice 3DGAMEMAN.com

EDITOR'S CHOICE CDRinf The Hardware Authority

For more information, please go to

http://www.vantecusa.com

Copyright © 2005 Vantec Thermal Technologies. All Rights Reserved. All registered trademarks belong to their respective companies.

Vantec Thermal Technologies

43951 Boscell Road. Fremont, CA 94538

Tel. 510.668.0368 Fax. 510.668.0367

Copyrighted material

Play more games. Have more fun.

Get great gaming performance on the GAMER'S POWER featuring the Intel® Pentium® 4 Processor with HT Technology.

Pentium® 4 HT inside™

iBUYPOWER

WWW.iBUYPOWER.COM

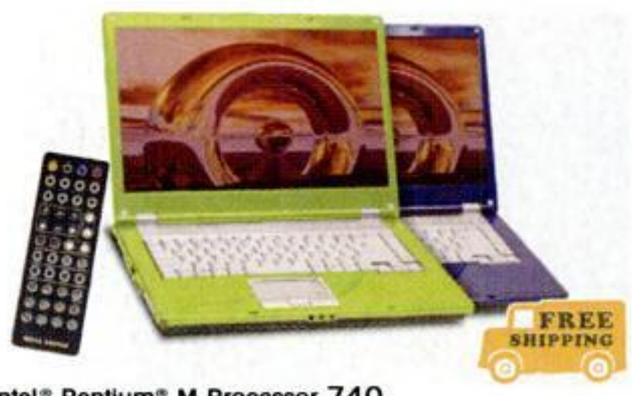
ML-TURBO — $ 1249

- 15.4" Wide Screen WXGA TFT LCD 1280X800 Display
- **Intel® Centrino™ Mobile Technology**
  - **Intel® Pentium® M Processor**
  - **Intel® PRO/Wireless 802.11a/b/g**
- **Intel® 915GM Chipset**
- **MXM NVIDIA® GeFoce™ 6600 GO 256MB DDR Video Card (User Upgradable)**
- 512MB PC-4200 DDR2 Memory
- ***Serial-ATA*** 60GB Hard Drive
- Removable 8x DVD±R/±RW Drive
- Gb Ethernet LAN & 56K Modem
- 3x USB 2.0 Ports
- 1X Firewire IEEE-1394 Ports
- **4-in-1 Build-in Media Card Reader**
- Microsoft® Windows® XP Home Edition
- Free 1-Year ***i-Care*** Deluxe 24/7 Phone Support
- High Performance Li-ion Battery
- FREE Deluxe Carrying Case

FREE SHIPPING

Intel® Pentium® M Processor 740 (**2MB** L2Cache, 1.73GHz, 533Mhz FSB)	$ 1249
Intel® Pentium® M Processor 750 (**2MB** L2Cache, 1.86GHz, 533Mhz FSB)	$ 1289
Intel® Pentium® M Processor 760 (**2MB** L2Cache, 2.0GHz, 533Mhz FSB)	$ 1359
Intel® Pentium® M Processor 770 (**2MB** L2Cache, 2.13GHz, 533Mhz FSB)	$ 1489

G-600 — $ 1439



- 15.4" Wide Screen WXGA TFT LCD 1280X800 Display
- **Intel® Centrino™ Mobile Technology**
  - **Intel® Pentium® M Processor**
  - **Intel® PRO/Wireless 802.11a/b/g**
- **Intel® 915PM Chipset**
- **Mobile ATI® Radeon™ X700 256MB DDR Video**
- 1024MB DDR-400 Memory
- 80GB 5400RPM Hard Drive
- Removable 8x DVD±R/±RW Drive
- Gb Ethernet LAN & 56K Modem
- **Build-in TV-Tuner with Remote Control**
- 4x USB 2.0 Ports
- 1X Firewire IEEE-1394 Ports
- **4-in-1 Build-in Media Card Reader**
- Microsoft® Windows® XP Home Edition
- Free 1-Year ***i-Care*** Deluxe 24/7 Phone Support
- High Performance Li-ion Battery

FREE SHIPPING

Intel® Pentium® M Processor 740 (2MB L2Cache, 1.73GHz, 533Mhz FSB)	$ 1439
Intel® Pentium® M Processor 750 (2MB L2Cache, 1.86GHz, 533Mhz FSB)	$ 1489
Intel® Pentium® M Processor 760 (2MB L2Cache, 2.0GHz, 533Mhz FSB)	$ 1549
Intel® Pentium® M Processor 770 (2MB L2Cache, 2.13GHz, 533Mhz FSB)	$ 1689

POWER BEST BUY — $ 599

Silver

Yellow

Green

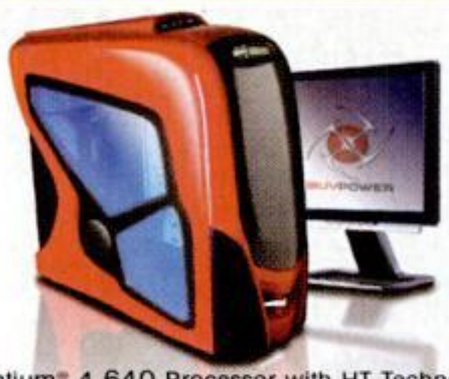
Blue

Black

- **NZXT® Guardian Mid-Tower Case** + See Through Window + Neon Light
- Intel® i945 Chipset MB w/ 16X PCI-Express
- Corsair 512MB DDR2-667 Memory
- ***Serial-ATA*** 200GB 7200RPM Hard Drive
- **16x Double Layer DVD±R/±RW Drive**
- 128MB ATI® Radeon™ X300SE 16X PCI Express Video
- 6-in-1 Media Reader
- 8-Channel Surround 3D Premium Sound
- 600Watt Subwoofer Speakers
- 10/100/1000 MBps Ethernet LAN
- Logitech Multimedia Keyboard & Optical Mouse
- FREE 1-Year 24/7 ***i-Care*** Deluxe Technical Support + On-Site Service

Intel® Pentium® 4 630 Processor with HT Technology (**2MB L2** Cache, 3.0 Ghz, 800 Mhz FSB)	$ 599
Intel® Pentium® 4 640 Processor with HT Technology (**2MB L2** Cache, 3.2 Ghz, 800 Mhz FSB)	$ 659
Intel® Pentium® 4 650 Processor with HT Technology (**2MB L2** Cache, 3.4 Ghz, 800 Mhz FSB)	$ 719
Intel® Pentium® 4 660 Processor with HT Technology (**2MB** L2 Cache, 3.6 Ghz, 800 Mhz FSB)	$ 849

GAMER EX — $ 1125



- Raidmax RX-9 Gaming Case with Remote Controlled Bootup
- Intel® i945 Chipset MB w/ 16X PCI-Express
- Corsair 1024MB DDR2-667 Memory
- ***Serial-ATA*** 200GB 7200RPM Hard Drive
- **16x Double Layer DVD±R/±RW Drive**
- 16x DVD-ROM Drive
- **NVIDIA® GeForce™ 6800GS 256MB 16X PCI Express** Video Card
- 8-Channel Surround 3D Premium Sound
- 10/100/1000 MBps Ethernet LAN
- Cintre RW-6510 5.1 Surround Speakers
- Logitech Multimedia Keyboard & Optical Mouse
- Microsoft® Windows® XP Home Edition
- FREE Wireless 802.11g 54MBps Network Adapter
- FREE 1-Year 24/7 ***i-Care*** Deluxe Technical Support + On-Site Service

Intel® Pentium® 4 640 Processor with HT Technology (**2MB** L2 Cache, 3.2 Ghz, 800 Mhz FSB)	$ 1125
Intel® Pentium® 4 650 Processor with HT Technology (**2MB** L2 Cache, 3.4 Ghz, 800 Mhz FSB)	$ 1195
Intel® Pentium® 4 660 Processor with HT Technology (2MB L2 Cache, 3.6 Ghz, 800 Mhz FSB)	$ 1335
Intel® Pentium® 4 670 Processor with HT Technology (2MB L2 Cache, 3.8 Ghz, 800 Mhz FSB)	$ 1559

GAMER'S POWER — $ 1199

- Raidmax Ninja Gaming Case
- **iBuypower® Liquid Cooling Technology**
- **NVIDIA® nForce™4 SLI Chip Dual PCI Express Motherboard**
- Corsair 1024MB **DDR2-667** Memory
- ***Serial-ATA*** 250GB 7200RPM Hard Drive w/ 8MB Cache
- **16x Double Layer DVD±R/±RW Drive**
- 16x DVD-ROM Drive
- **2X NVIDIA® GeForce™ 6600 256MB 16X PCI Express** Video Card **- SLI Enabled**
- 8-Channel Surround 3D Premium Sound
- 10/100/1000 MBps Ethernet LAN
- Cintre RW-6510 5.1 Surround Speakers
- Logitech Multimedia Keyboard & Optical Mouse
- Microsoft® Windows® XP Home Edition
- FREE Wireless 802.11g 54MBps Network Adapter
- FREE 1-Year 24/7 ***i-Care*** Deluxe Technical Support + On-Site Service

Intel® Pentium® D 920 Processor (**2MB** Cache, 2.8 Ghz, 800 Mhz FSB)	$ 1199
Intel® Pentium® D 930 Processor (**2MB** Cache, 3.0 Ghz, 800 Mhz FSB)	$ 1299
Intel® Pentium® D 940 Processor (**2MB Cache,** 3.2 Ghz, 800 Mhz FSB)	$ 1429

DREAM 2006 — $ 1419

- Raidmax X-1 Gaming Case
- **iBuypower® Liquid Cooling Technology**
- **NVIDIA® nForce™4 SLI Chip Dual PCI Express Motherboard**
- Corsair 1024MB **DDR2-667** Memory
- ***Serial-ATA*** 250GB 7200RPM Hard Drive w/ 8MB Cache
- **16x Double Layer DVD±R/±RW Drive**
- 16x DVD-ROM Drive
- **NVIDIA® GeForce™ 7800GT 256MB DDR3 16X PCI Express** Video Card
- 8-Channel Surround 3D Premium Sound
- 10/100/1000 MBps Ethernet LAN
- Logitech X-530 5.1 Surround Sound Speakers
- Logitech Multimedia Keyboard & Optical Mouse
- Microsoft® Windows® XP Home Edition
- FREE Wireless 802.11g 54MBps Network Adapter
- FREE 1-Year 24/7 ***i-Care*** Deluxe Technical Support + On-Site Service

Intel® Pentium® D 920 Processor (2MB Cache, 2.8 Ghz, 800 Mhz FSB)	$ 1419
Intel® Pentium® D 930 Processor (2MB Cache, 3.0 Ghz, 800 Mhz FSB)	$ 1519
Intel® Pentium® D 940 Processor (2MB Cache, 3.2 Ghz, 800 Mhz FSB)	$ 1649

Order Toll Free 888. 462. 3899

INTEL®, the INTEL® inside logo and Pentium® are all registered trademarks and Centrino™ is a trademark of INTEL® Corporation in the United State and other Countries.

Copyrighted material

GAMER-SLI

- ~ **NVIDIA® nForce™4-SLI Chip Dual PCI-Express MB**
- ~ Microsoft Windows® XP Home Edition
- ~ **iBuypower® Ninja Gaming Case with CPU Liquid Cooling System**
- ~ Corsair 1024MB **DDR400** Memory
- ~ ***Serial-ATA*** 300GB 7200RPM Hard Drive
- ~ **16x Double Layer DVD±R/±RW Drive**
- ~ 16X DVD-ROM Drive
- ~ **2X NVIDIA® GeForce™ 7800GT PCI Express 256MB** Video Cards - SLI Enabled
- ~ 8 Channel Surround 3D Premium Sound
- ~ Creative Inspire 8 Channel Surround Sound Speakers
- ~ 10/100/1000 MBps Ethernet LAN
- ~ Logitec Multimedia Office Keyboard; Opcital Mouse
- ~ Free Wireless 802.11g 54MBps Network Adapter
- ~ Free 1-Year 24/7 ***I-Care*** Deluxe Technical Support + On-Site Service
- ~ Upgrade to Sicuro RW-670XL 5.1 Crazy Lighting Speaker System Add $189

$ 1549

AMD Athlon™ 64 FX-60 Processor	$ 2479
AMD Athlon™ 64 X2 4600+ Processor	$ 1989
AMD Athlon™ 64 X2 4400+ Processor	$ 1859
AMD Athlon™ 64 X2 4200+ Processor	$ 1749
AMD Athlon™ 64 4000+ Processor	$ 1699
AMD Athlon™ 64 3700+ Processor	$ 1589
AMD Athlon™ 64 3500+ Processor	$ 1549

AMD Athlon 64 · AMD Athlon 64 FX · AMD Turion 64 Mobile Technology · AMD Athlon 64 X2

iBUYPOWER

- Provides leading-edge 32-bit performance for music, video, and games and is ready for future 64-bit software.
- Improves security against certain types of viruses, with Enhanced Virus Protection for Microsoft® Windows® XP SP2.
- Conserves power and operates quietly with AMD Cool'n'Quiet™ technology.
- Features HyperTransport™ technology for improved multitasking performance.

BATTALION CL-Turbo

- ~ **15.4" Wide Screen 16:10 WXGA TFT LCD 1280x800 Display**
- ~ **AMD® Turion™ 64 Mobile Technology**
  - **- AMD PowerNow! Technology**
  - **- HyperTransport Technology**
  - **- Ehanced Virus Protection Technology**
- ~ Microsoft® Windows® XP Home Edition
- ~ **Mobile ATI® Radeon™ X700 128MB DDR Video**
- ~ 1024MB DDR-400 Memory
- ~ Removable 8x DVD±R/±RW / CD-RW Drive
- ~ 60GB 5400RPM Ultra-ATA100 Hard Drive
- ~ 10/100Mb Ethernet LAN & 56K Modem
- ~ **Wireless 802.11g 54MBps Mini-PCI Network**
- ~ 4x USB 2.0 & 1x Firewire IEEE-1394 Ports; **3-in-1 Build-in Media Card Reader**
- ~ Free 1-Year ***I-Care*** Deluxe 24/7 Phone Support
- ~ High Performance Li-Ion Battery
- ~ **Free Deluxe Carrying Case**

FREE SHIPPING

$ 1249

AMD Turion™ 64 Mobile Technology MT-40 Processor	$ 1375
AMD Turion™ 64 Mobile Technology MT-37 Processor	$ 1329
AMD Turion™ 64 Mobile Technology MT-34 Processor	$ 1295
AMD Turion™ 64 Mobile Technology MT-30 Processor	$ 1249

BATTALION (AMD) S-Turbo

- ~ **15.4" Wide Screen16:10 WXGA TFT LCD 1280x800 Display**
- ~ **AMD® Mobile Athlon™ 64 Processor with HyperTransport Technology**
- ~ Microsoft® Windows® XP Home Edition
- ~ **Mobile ATI® Radeon™ 9700 PRO 128MB DDR Video**
- ~ 512MB DDR-400 Memory
- ~ Removable 8x DVD±R/±RW / CD-RW Drive
- ~ 40GB 5400RPM Ultra-ATA100 Hard Drive
- ~ 10/100Mb Ethernet LAN & 56K Modem
- ~ **Wireless 802.11g 54MBps Mini-PCI Network**
- ~ 3x USB 2.0 & 1x Firewire IEEE-1394 Ports
- ~ **3-in-1 Build-in Media Card Reader**
- ~ Free 1-Year ***I-Care*** Deluxe 24/7 Phone Support
- ~ **Choice of 6 Exclusive Reflective Colors**
- ~ High Performance Li-Ion Battery
- ~ **Free Deluxe Carrying Case**

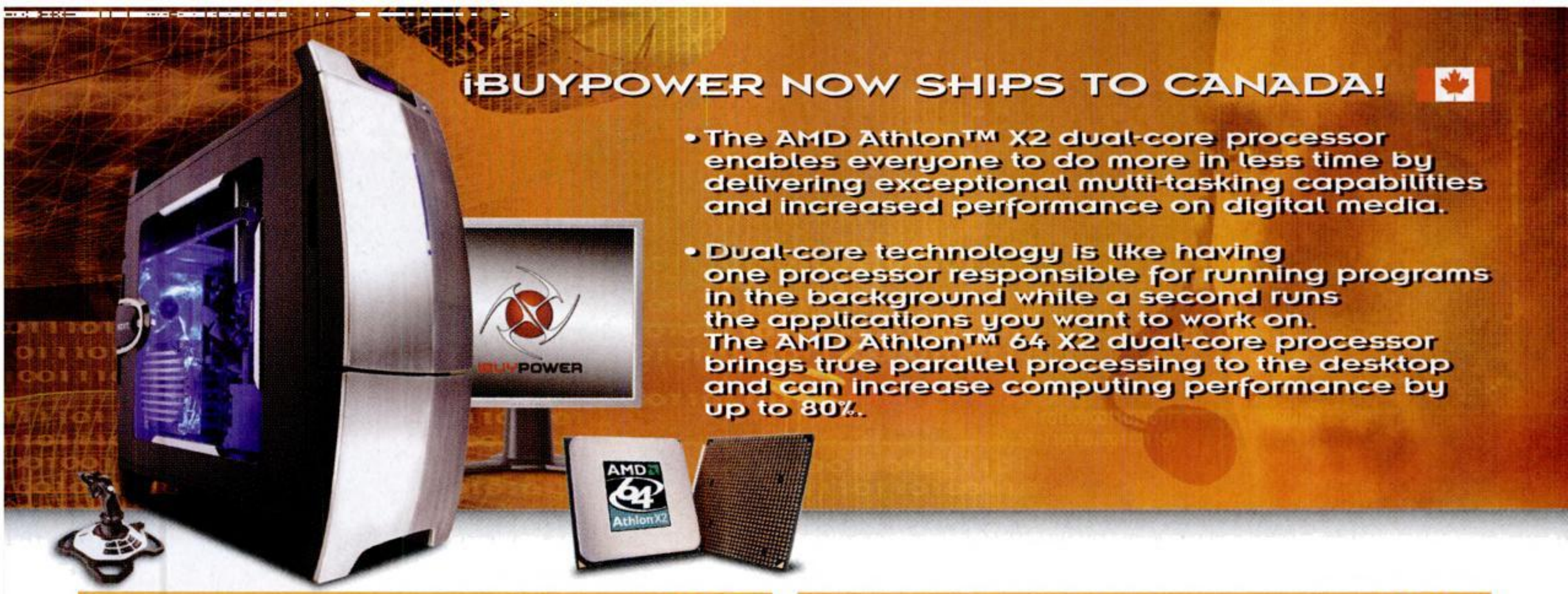
FREE SHIPPING

$ 1039

Mobile AMD Athlon™ 64 3700+ Processor	$ 1169
Mobile AMD Athlon™ 64 3400+ Processor	$ 1119
Mobile AMD Athlon™ 64 3200+ Processor	$ 1079
Mobile AMD Athlon™ 64 3000+ Processor	$ 1039

Order Toll Free 888. 462. 3899

Copyrighted material



iBUYPOWER NOW SHIPS TO CANADA!

- The AMD Athlon™ X2 dual-core processor enables everyone to do more in less time by delivering exceptional multi-tasking capabilities and increased performance on digital media.
- Dual-core technology is like having one processor responsible for running programs in the background while a second runs the applications you want to work on. The AMD Athlon™ 64 X2 dual-core processor brings true parallel processing to the desktop and can increase computing performance by up to 80%.

BARGAIN 64 — $ 599

AMD Athlon™ 64 3200+ Processor	$ 599
AMD Athlon™ 64 3500+ Processor	$ 659
AMD Athlon™ 64 3700+ Processor	$ 689
AMD Athlon™ 64 4000+ Processor	$ 799

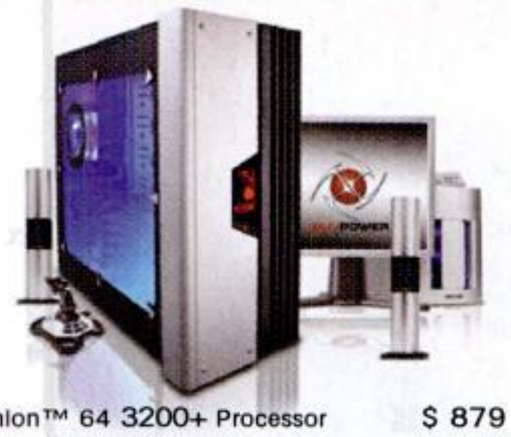
- **NVIDIA® nForce™4 SLI Chip Dual PCI Express Motherboard**
- **NZXT® Trinity Mid-Tower Case** + See Through Window + Neon Light
- Corsair 512MB **DDR400** Memory
- ***Serial-ATA*** 160GB 7200RPM Hard Drive
- 16x DVD-ROM Drive
- 52x32x52 CD-RW Drive
- **NVIDIA® GeForce™ 6600 256MB 16X PCI Express** Video Card
- 8-Channel Surround 3D Premium Sound
- 10/100/1000 MBps Ethernet LAN
- 600Watt Surround Sound Speakers
- Logitech Multimedia Keyboard & Optical Mouse
- FREE 1-Year 24/7 ***I-Care*** Deluxe Technical Support + On-Site Service
- Add ViewSonic® VX924 19" LCD – Xtreme 4ms video for ultimate gaming @ $ 449

VALUE PRO — $ 979

AMD Athlon™ 64 3200+ Processor	$ 979
AMD Athlon™ 64 3500+ Processor	$ 999
AMD Athlon™ 64 3700+ Processor	$ 1079
AMD Athlon™ 64 4000+ Processor	$ 1199
AMD Athlon™ 64 X2 4200+ Processor	$ 1249

- **NVIDIA® nForce™4 SLI Chip Dual PCI Express Motherboard**
- Microsoft® Windows® XP Home Edition
- **NZXT® Trinity Mid-Tower Case**
- Corsair 1024MB **DDR400** Memory
- ***Serial-ATA*** 200GB 7200RPM Hard Drive
- **16x Double Layer DVD±R/±RW Drive**
- **NVIDIA® GeForce™ 6200 w/ TurboCache 256MB 16X PCI Express** Video Card
- 8-Channel Surround 3D Premium Sound
- 10/100/1000 MBps Ethernet LAN
- 600Watt Surround Sound Speakers
- 17" ViewSonic® VA712B LCD Monitor
- Logitech Multimedia Keyboard & Optical Mouse
- FREE Wireless 802.11g 54MBps Network Adapter
- FREE 1-Year 24/7 ***I-Care*** Deluxe Technical Support + On-Site Service

GAMER FX — $ 879



AMD Athlon™ 64 3200+ Processor	$ 879
AMD Athlon™ 64 3500+ Processor	$ 939
AMD Athlon™ 64 3700+ Processor	$ 979
AMD Athlon™ 64 X2 3800+ Processor	$ 1049
AMD Athlon™ 64 X2 4200+ Processor	$ 1129

- **NVIDIA® nForce™4 SLI Chip Dual PCI Express Motherboard**
- Microsoft® Windows® XP Home Edition
- Raidmax X-1 Gaming Case
- **iBuypower® Liquid Cooling Technology**
- Corsair 1024MB **DDR400** Memory
- ***Serial-ATA*** 200GB 7200RPM Hard Drive
- **16x Double Layer DVD±R/±RW Drive**
- 6-in-1 Media Card Reader
- **2X NVIDIA® GeForce™ 6600 256MB 16X PCI Express Video - SLI Enabled**
- 8-Channel Surround 3D Premium Sound
- 10/100/1000 MBps Ethernet LAN
- 600Watt Surround Sound Speakers
- Logitech Multimedia Keyboard & Optical Mouse
- FREE Wireless 802.11g 54MBps Network Adapter
- FREE 1-Year 24/7 ***I-Care*** Deluxe Technical Support + On-Site Service

BACK TO SCHOOL 64 — $ 989

Silver
Yellow
Green
Blue
Black

AMD Athlon™ 64 3500+ Processor	$ 989
AMD Athlon™ 64 3700+ Processor	$ 1019
AMD Athlon™ 64 4000+ Processor	$ 1129
AMD Athlon™ 64 X2 3800+ Processor	$ 1099
AMD Athlon™ 64 X2 4200+ Processor	$ 1179

- **NVIDIA® nForce™4 SLI Chip Dual PCI Express Motherboard**
- Microsoft® Windows® XP Home Edition
- **NZXT® Guardian Mid-Tower Case** + See Through Window + Neon Light
- Corsair 1024MB **DDR400** Memory
- ***Serial-ATA*** 250GB 7200RPM Hard Drive
- **16x Double Layer DVD±R/±RW Drive**
- 16x DVD-ROM Drive
- **ATI Radeon™ X800GTO 256MB 16X PCI Express** Video Card
- 8-Channel Surround 3D Premium Sound
- 10/100/1000 MBps Ethernet LAN
- Cintre RW-6510 5.1 Surround Speakers
- Logitech Multimedia Keyboard & Optical Mouse
- FREE Wireless 802.11g 54MBps Network Adapter
- FREE 1-Year 24/7 ***I-Care*** Deluxe Technical Support + On-Site Service

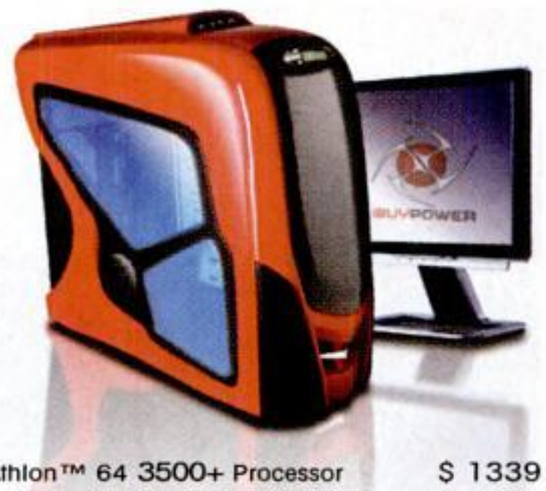
NIGHT DREAMER FX — $ 1289

AMD Athlon™ 64 3500+ Processor	$ 1289
AMD Athlon™ 64 3700+ Processor	$ 1319
AMD Athlon™ 64 4000+ Processor	$ 1429
AMD Athlon™ 64 X2 4200+ Processor	$ 1479
AMD Athlon™ 64 X2 4400+ Processor	$ 1589

- **NVIDIA® nForce™4 SLI Chip Dual PCI Express Motherboard**
- Microsoft® Windows® XP Home Edition
- Raidmax Ninja Gaming Case
- **iBuypower® Liquid Cooling Technology**
- Corsair 1024MB **DDR400** Memory
- ***Serial-ATA*** 250GB 7200RPM Hard Drive w/ 8MB Cache
- **16x Double Layer DVD±R/±RW Drive**
- 16x DVD-ROM Drive
- **2X NVIDIA® GeForce™ 6800GS 256MB DDR3 16X PCI Express Video Card - SLI Enabled**
- 8-Channel Surround 3D Premium Sound
- 10/100/1000 MBps Ethernet LAN
- Logitech X-530 5.1 Surround Sound Speakers
- Logitech Multimedia Keyboard & Optical Mouse
- FREE Wireless 802.11g 54MBps Network Adapter
- FREE 1-Year 24/7 ***I-Care*** Deluxe Technical Support + On-Site Service

2ILLION FX — $ 1339

Silver
Yellow
Red
Blue
Black



AMD Athlon™ 64 3500+ Processor	$ 1339
AMD Athlon™ 64 3700+ Processor	$ 1369
AMD Athlon™ 64 4000+ Processor	$ 1479
AMD Athlon™ 64 X2 4200+ Processor	$ 1549
AMD Athlon™ 64 X2 4400+ Processor	$ 1659
AMD Athlon™ 64 FX-60 Processor	$ 2279

- **NVIDIA® nForce™4 SLI Chip Dual PCI Express Motherboard**
- Microsoft® Windows® XP Home Edition
- Raidmax RX-9 Gaming Case with Remote Controlled Bootup
- Corsair 1024MB **DDR400** Memory
- ***Serial-ATA*** 300GB 7200RPM Hard Drive
- **16x Double Layer DVD±R/±RW Drive**
- 16x DVD-ROM Drive
- **NVIDIA® GeForce™ 7800GTX 256MB DDR3 16X PCI Express** Video Card
- 8-Channel Surround 3D Premium Sound
- 10/100/1000 MBps Ethernet LAN
- Logitech Multimedia Keyboard & Optical Mouse
- FREE Wireless 802.11g 54MBps Network Adapter
- FREE 1-Year 24/7 ***I-Care*** Deluxe Technical Support + On-Site Service
- Upgrade to Sicuro RW360XL 2.1 Lighting Speakers Add $75

WWW.iBUYPOWER.COM

Copyrighted material

Small in stature, LARGE in features.

intel inside
pentium M

miniPC

The AOpen miniPC* features the Intel Pentium M notebook processor, allowing near silent cooling without sacrificing performance. Packed in the 6"x 6"x 2.5" brushed aluminum housing is a slot loading DVD writer, 2.5" HDD, integrated Ethernet, USB2.0, IEEE1394, optional mini-PCI 802.11b/g wireless and more. The miniPC provides DVI, S-Video, component and composite connectors so it can be hooked up to HDTVs, plasma displays, large screen flat panel LCDs.

IEEE1394 YPbPr

Visit AOpen at the 2006 International CES
Venetian/Toscana 3710

ASI

Where to buy:
Tech Data INGRAM MICRO
www.jetta.com/store

For Distribution Purposes, visit:
http://usa.aopen.com/wheretobuy

AOpen®

AOpen America Inc. 1911 Lundy Ave. San Jose, CA 95131 1-888-97-AOPEN

* System configuration will vary depending on reseller

All logos are trademarks of their respective companies.

Copyrighted material

GAMER XPLORER X5-6700

$ 1329

- Intel® Centrino™ Mobile Technology
- Intel® Pentium® M Processor
- Intel® PRO Wireless 802.11A/B/G Networking
- Intel® 915GM Chipset
- **Genuine Windows® XP Home Edition w/ SP 2**
- 1024MB DDR-II PC4200 533 Memory
- 80GB 5400RPM Serial ATA150 Hard Drive
- Upgradeable MXM 16X PCI-Express NVIDIA® GeForce 6600 Go 256MB
- 15.4" WSXGA TFT Display 1680X1050 Pixels
- 8X DVD+-RW Drive
- 10/100 Network Card & 56K V.92 Modem
- 3-in-1 Built-in Media Reader; 1 PCMCIA Type II Slot
- 1 Firewire IEEE 1394 & 3 USB 2.0 Ports
- 6 Hours Battery Life; Weight only 6.39 Lbs
- Free Carrying Case; 6 Custom Colors to Choose From
- One Year 24/7 Toll Free Tech Support
- Free Shipping

FREE SHIPPING

Intel® Pentium® M Processor 780 (2MB L2 Cache, 2.26Ghz, 533 Mhz FSB)	$ 1799
Intel® Pentium® M Processor 770 (2MB L2 Cache, 2.13Ghz, 533 Mhz FSB)	$ 1569
Intel® Pentium® M Processor 760 (2MB L2 Cache, 2.0Ghz, 533 Mhz FSB)	$ 1435
Intel® Pentium® M Processor 750 (2MB L2 Cache, 1.86Ghz, 533 Mhz FSB)	$ 1375
Intel® Pentium® M Processor 740 (2MB L2 Cache, 1.73Ghz, 533 Mhz FSB)	$ 1329

Play more games. Have more fun.

Get great gaming performance on the CYBERPOWER XP 8000 Dream featuring the Intel® Pentium® 4 Processor with HT Technology.

intel
Pentium® 4 HT
inside™

CYBERPOWER RECOMMENDS WINDOWS® XP

CYBERPOWERINC.COM WOW.

GAMER INFINITY 9900 PRO

$ 1639

- **NVIDIA® nForce™4 SLI Chipset MB with Dual 16X PCI Express & Dual Core Technology**
- **Genuine Windows® XP Professional X64 64Bit OS**
- Microsoft® Works 8.0
- Corsair 1024MB DDR2 667 Dual Channel Memory
- 200GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- **(2) NVIDIA® Geforce™ 7800 GT 256MB DDR3 16X PCI Express Powered by Xmdia, Up to 2X the performance of a single graphics card solution**
- LG 16x DVD +-RW Drive & LG 16X DVD-ROM
- Intel® High Definition 7.1 Surround Sound
- Creative Cambridge Inspire P7800 7.1 Surround Sound System
- Logitech Deluxe 104 Keyboard
- Microsoft® Optical intelli Explorer Mouse
- **Aluminum** X-Navigator Server Tower Case 420Watt w/ MOD "See Through Windows"
- Free First Year On Site Service plus 24/7 Tech Support
- Free 802.11G Wireless PCI Network Adaptor

Intel® Pentium® D Processor 950 (2MB L2 Cache, 3.4Ghz, 800 Mhz FSB)	$ 2069
Intel® Pentium® D Processor 940 (2MB L2 Cache, 3.2Ghz, 800 Mhz FSB)	$ 1835
Intel® Pentium® D Processor 930 (2MB L2 Cache, 3.0Ghz, 800 Mhz FSB)	$ 1725
Intel® Pentium® D Processor 920 (2MB L2 Cache, 2.8Ghz, 800 Mhz FSB)	$ 1639
Intel® Pentium® 4 Processor 670 with HT Technology (2MB L2 Cache, 3.8Ghz, 800 Mhz FSB)	$ 2029
Intel® Pentium® 4 Processor 660 with HT Technology (2MB L2 Cache, 3.6Ghz, 800 Mhz FSB)	$ 1809

GAMER INFINITY 8000 DREAM

$ 749

- Intel® I915P Chipset 16X PCI Express MB
- **Genuine Windows® XP Home Edition w/ SP 2**
- Microsoft® Works 8.0
- Corsair 512MB DDR2 PC4200 Dual Channel Memory
- 200GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- 16X PCI Express NVIDIA® Geforce™ 6600 256MB DDR Video Card Powered by Xmdia
- LG 16X DVD+-RW Drive
- Intel® High Definition 7.1 Surround Sound
- Logitech X530 5.1 Subwoofer Speaker System
- Logitech Deluxe 104 Keyboard
- Microsoft® USB Optical IntelliMouse
- **Turbo X-Cruiser Case 420Watt with See Through Windows**
- Free First Year On Site Service plus 24/7 Tech Support
- Free 802.11G Wireless PCI Network Adaptor

Intel® Pentium® 4 Processor 670 with HT Technology (2MB L2 Cache, 3.8Ghz, 800 Mhz FSB)	$ 1219
Intel® Pentium® 4 Processor 660 with HT Technology (2MB L2 Cache, 3.6Ghz, 800 Mhz FSB)	$ 995
Intel® Pentium® 4 Processor 650 with HT Technology (2MB L2 Cache, 3.4Ghz, 800 Mhz FSB)	$ 855
Intel® Pentium® 4 Processor 640 with HT Technology (2MB L2 Cache, 3.2Ghz, 800 Mhz FSB)	$ 795
Intel® Pentium® 4 Processor 630 with HT Technology (2MB L2 Cache, 3.0Ghz, 800 Mhz FSB)	$ 749

XP 8000 DREAM

$ 699

- Intel® I915P Chipset 16X PCI Express MB
- **Genuine Windows® XP Home Edition w/ SP 2**
- Microsoft® Works 8.0
- Corsair 512MB PC3200 DDR400 Dual Channel Memory
- 160GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- 16X PCI Express ATI® RADEON™ X1300 128MB DDR Video Card w/ TV Out
- LG 16X DVD+-RW Drive
- Intel® High Definition 7.1 Surround Sound
- 600Watt Subwoofer System
- Internet Multimedia Keyboard & Internet Mouse
- **Turbo X-Plorer Case 420Watt with See Through Windows**
- 6 Cool Custom Colors to Choose From
- Free First Year On Site Service plus 24/7 Tech Support
- Upgrade to Viewsonic® Office Keyboard and Optical Mouse +$49
- Upgrade to Sicuro RW360XL 2.1 Gaming Speakers for $75

Intel® Pentium® 4 Processor 670 with HT Technology (2MB L2 Cache, 3.8Ghz, 800 Mhz FSB)	$ 1175
Intel® Pentium® 4 Processor 660 with HT Technology (2MB L2 Cache, 3.6Ghz, 800 Mhz FSB)	$ 955
Intel® Pentium® 4 Processor 650 with HT Technology (2MB L2 Cache, 3.4Ghz, 800 Mhz FSB)	$ 815
Intel® Pentium® 4 Processor 640 with HT Technology (2MB L2 Cache, 3.2Ghz, 800 Mhz FSB)	$ 755
Intel® Pentium® 4 Processor 630 with HT Technology (2MB L2 Cache, 3.0Ghz, 800 Mhz FSB)	$ 699

ORDER TOLL FREE [800]707-0393

Intel®, Intel® logo, Intel Inside®, Intel Inside® logo, Intel® Centrino™, Intel® Centrino™ logo, Celeron®, Intel® Xeon™, Intel® SpeedStep®, Itanium®, Pentium®, and Pentium® III Xeon™ are trademarks or registered trademarks of Intel® Corporation or its subsidiaries in the United States and other countries. All prices are subject to change without notice or obligation. CyberPower is not responsible for any typographical and photographic errors. Copyright © 2005 CyberPower. All rights reserved.

Copyrighted material

$ 775

GAMER ULTRA 3000 DREAM

- **NVIDIA® nForce™4 SLI Chipset MB with Dual 16X PCI Express**
- **Genuine Windows® XP Home Edition w/ SP 2**
- Microsoft® Works 8.0
- Corsair 1024MB PC3200 DDR400 Memory
- 200GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- 16X PCI Express NVIDIA® GeForce™ 6600 256MB DDR w/ TV OutPowered by Xmdia
- LG 16X DVD+-RW Drive & LG 16X DVD-ROM
- NVIDIA® nForce 4 7.1 3-D Surround Sound
- 600Watt Subwoofer System
- Logitech Deluxe 104 Keyboard
- Logitech Optical Wheel Mouse
- **Nzxt® X-Nemesis Tower Case 425Watt w/MOD "See Through Windows"**
- Free First Year On Site Service plus 24/7 Tech Support
- Upgrade to Sicuro RW670XL 5.1 Crazy Lighting Speakers System for $139
- Free 802.11G Wireless PCI Network Adaptor

AMD Athlon™ 64 X2 4800+ Processor	$ 1435
AMD Athlon™ 64 X2 4400+ Processor	$ 1129
AMD Athlon™ 64 X2 4200+ Processor	$ 1025
AMD Athlon™ 64 X2 3800+ Processor	$ 945
AMD Athlon™ 64 3500+ Processor	$ 825
AMD Athlon™ 64 3200+ Processor	$ 775

$ 1009

GAMER ULTRA SLI ELITE

- **NVIDIA® nForce™4 SLI Chipset MB with Dual 16X PCI Express**
- **Genuine Windows® XP Home Edition w/ SP 2**
- Microsoft® Works 8.0
- Corsair 1024MB PC3200 DDR400 Memory
- 200GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- **(2) NVIDIA® Geforce™ 6800 XT 256MB DDR3 Powered by Xmdia, Up to 2x the performance of a single graphics card solution**
- LG 16X DVD+-RW Drive & LG 16X DVD-ROM
- NVIDIA® nForce 4 7.1 3-D Surround Sound
- 600Watt Subwoofer System
- Logitech Deluxe 104 Keyboard
- Logitech Optical Wheel Mouse
- **Turbo X-Cruiser Case 420Watt with See Through Windows**
- 6 Cool Custom Colors to Choose From
- Free First Year On Site Service plus 24/7 Tech Support
- Free 802.11G Wireless PCI Network Adaptor

AMD Athlon™ 64 X2 4400+ Processor	$ 1465
AMD Athlon™ 64 X2 4200+ Processor	$ 1359
AMD Athlon™ 64 X2 3800+ Processor	$ 1279
AMD Athlon™ 64 4000+ Processor	$ 1309
AMD Athlon™ 64 3800+ Processor	$ 1255
AMD Athlon™ 64 3500+ Processor	$ 1165
AMD Athlon™ 64 3200+ Processor	$ 1009

$ 1599

GAMER ULTRA 3900 PRO

- **NVIDIA® nForce™4 SLI Chipset MB with Dual 16X PCI Express**
- **Genuine Windows® XP Home Edition w/ SP 2**
- Microsoft® Works 8.0
- Corsair 1024MB PC3200 DDR400 Memory
- 250GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- 16X PCI Express NVIDIA® GeForce™ 6800 GS 256MB DDR3 Powered by Xmdia
- LG 16X DVD+-RW Drive; LG 16X DVD-ROM
- NVIDIA® nForce 4 7.1 3-D Surround Sound
- Creative Cambridge Inspire P7800 7.1 Surround Sound System
- 19" ViewSonic VA912P Xtreme 8MS Gaming LCD Display
- Logitech Deluxe 104 Keyboard
- Microsoft® Optical intelli Explorer Mouse
- **Aluminum** CoolerMaster Praetorian 730 Midtower Case 420Watt
- **Xtreme Liquid Cooling System**
- Free First Year On Site Service plus 24/7 Tech Support
- Free 802.11G Wireless PCI Network Adaptor

AMD Athlon™ 64 FX-60 Processor	$ 2415
AMD Athlon™ 64 X2 4400+ Processor	$ 1789
AMD Athlon™ 64 X2 4200+ Processor	$ 1689
AMD Athlon™ 64 X2 3800+ Processor	$ 1599

- **The AMD Athlon™ X2 dual-core processor enables everyone to do more in less time by delivering exceptional multi-tasking capabilities and increased performance on digital media.**
- **Dual-core technology is like having one processor responsible for running programs in the background while a second runs the applications you want to work on. The AMD Athlon™ 64 X2 dual-core processor brings true parallel processing to the desktop and can increase computing performance by up to 80%.**

AMD 64 Athlon X2

AMD Turion 64 MOBILE TECHNOLOGY

$ 735

GAMER ULTRA SLI BASIC

- **NVIDIA® nForce™4 SLI Chipset MB with Dual 16X PCI Express**
- **Genuine Windows® XP Home Edition w/ SP 2**
- Microsoft® Works 8.0
- Corsair 512MB PC3200 DDR400 Memory
- 160GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- **(2) NVIDIA® Geforce™ 6600 256MB DDR3, 16X PCI Express w/ TV-Out Powered by Xmdia, Up to 2x the performance of a single graphics card solution**
- LG 16X DVD+-RW Drive
- NVIDIA® nForce™4 7.1 3-D Surround Sound
- 600Watt Subwoofer System
- Logitech Deluxe 104 Keyboard
- Logitech Optical Wheel Mouse
- **Nzxt® X-Nemesis Tower Case 425Watt w/MOD "See Through Windows"**
- Free First Year On-Site Service plus 24/7 Tech Support

AMD Athlon™ 64 FX-60 Processor	$ 1689
AMD Athlon™ 64 X2 4600+ Processor	$ 1219
AMD Athlon™ 64 X2 4400+ Processor	$ 1085
AMD Athlon™ 64 X2 4200+ Processor	$ 985
AMD Athlon™ 64 X2 3800+ Processor	$ 905
AMD Athlon™ 64 3500+ Processor	$ 789
AMD Athlon™ 64 3200+ Processor	$ 735

ULTRA

CYBERPOWER Recommends ULTRA Power Supply

WWW.CYBERPOWERINC.COM

AMD®, the AMD® Arrow logo, AMD® Athlon™, and combinations thereof are trademarks of Advanced Micro Devices, Inc.

Copyrighted material

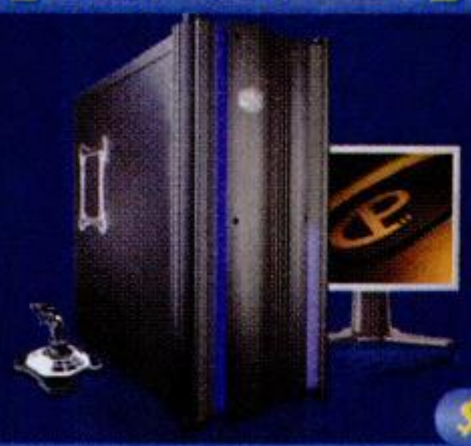
ORDER TOLL FREE [800]707-0393

$ 1679

GAMER ULTRA SLI PRO

- **NVIDIA® nForce™4 SLI Chipset MB with Dual 16X PCI Express**
- **Genuine Windows® XP Home Edition w/ SP 2**
- Microsoft® Works 8.0
- Corsair 2048MB PC3200 DDR400 Memory
- 250GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- **(2) NVIDIA® Geforce™ 7800 GT 256MB DDR3 16X PCI Express Powered by Xmdia, Up to 2X the performance of a single graphics card solution**
- LG 16X DVD+-RW Drive & LG 16X DVD-ROM
- NVIDIA® nForce 4 7.1 3-D Surround Sound
- Creative Cambridge Inspire P7800 7.1 Surround Sound System
- Logitech Deluxe 104 Keyboard
- Microsoft® Optical intelli Explorer Mouse
- **Asus Vento 3600 Xtreme Gaming Case w/ 500Watt Power Supply**
- **Xtreme Liquid Cooling System**
- Free First Year On Site Service plus 24/7 Tech Support
- Free 802.11G Wireless PCI Network Adaptor

AMD Athlon™ 64 FX-60 Processor	$ 2589
AMD Athlon™ 64 X2 4600+ Processor	$ 2119
AMD Athlon™ 64 X2 4200+ Processor	$ 1879
AMD Athlon™ 64 X2 3800+ Processor	$ 1769
AMD Athlon™ 64 3500+ Processor	$ 1679



$ 895

GAMER ULTRA 3000 PRO

- NVIDIA® nForce™4 Chipset MB w/ 16X PCI Express
- **Genuine Windows® XP Home Edition w/ SP 2**
- Microsoft® Works 8.0
- Corsair 1024MB PC3200 DDR400 Memory
- 200GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- 16X PCI Express NVIDIA® GeForce™ 6800 XT 256MB Video Card w/ TV Out & DVI Powered by Xmdia
- LG 16X DVD+-RW Drive & LG 16X DVD-ROM
- NVIDIA® nForce 4 7.1 3-D Surround Sound
- 600Watt Subwoofer System
- Logitech Deluxe 104 Keyboard
- Logitech Optical Wheel Mouse
- **Aluminum** CoolerMaster Praetorian 730 Midtower Case 420Watt
- Free First Year On Site Service plus 24/7 Tech Support
- Free 802.11G Wireless PCI Network Adaptor
- Upgrade to Ultra X-Connect 500W ATX Power supply w/2 80mm Fans - Blue w/UV Orange for $95

AMD Athlon™ 64 X2 4400+ Processor	$ 1249
AMD Athlon™ 64 X2 4200+ Processor	$ 1149
AMD Athlon™ 64 X2 3800+ Processor	$ 1065
AMD Athlon™ 64 4000+ Processor	$ 1095
AMD Athlon™ 64 3500+ Processor	$ 949
AMD Athlon™ 64 3200+ Processor	$ 895

$ 1249

GAMER XPLORER-64 3700

- **AMD Turion™ 64 Mobile Technology**
  - **-AMD PowerNow! Technology**
  - **-HyperTransport Technology**
  - **-Enhanced Virus Protection Technology**
- **Genuine Windows® XP Home Edition w/ SP 2**
- 1024MB PC3200 DDR400 Memory
- 60 GB Ultra ATA100 Hard Drive
- Mobile ATI X700 16X PCI-Express 128MB Video
- 15.4" WXGA Wide-Screen TFT Display 1280x800 Pixels
- 8X DVD+-RW Drive
- 10/100 Network Card & 56K V.92 Modem
- Wireless 802.11G 54Mbps Networking
- 3-in-1 Built-in Media Reader
- 1 Firewire IEEE 1394 & 4 USB 2.0 Ports
- Weight only 6.39 Lbs
- 6 Custom Colors to Choose From
- One Year 24/7 Toll Free Tech Support
- Free Shipping

FREE SHIPPING

AMD Turion™ 64 Mobile Technology MT-40	$ 1375
AMD Turion™ 64 Mobile Technology MT-37	$ 1329
AMD Turion™ 64 Mobile Technology MT-34	$ 1295
AMD Turion™ 64 Mobile Technology MT-32	$ 1265
AMD Turion™ 64 Mobile Technology MT-30	$ 1249

CYBERPOWER RECOMMENDS WINDOWS® XP

$ 629

GAMER ULTRA 7000 ELITE

- NVIDIA® nForce™4 Chipset MB w/ 16X PCI Express
- **Genuine Windows® XP Home Edition w/ SP 2**
- Microsoft® Works 8.0
- Corsair 512MB PC3200 DDR400 Memory
- 200GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
- NVIDIA® GeForce™ 6200 Turbo Cache Supporting 256MB Powered by Xmdia
- LG 16X DVD+-RW Drive
- NVIDIA® nForce™4 7.1 3-D Surround Sound
- 600Watt Subwoofer System
- Logitech Deluxe 104 Keyboard
- Logitech Optical Wheel Mouse
- **Turbo X-Cruiser Case 420Watt with See Through Windows**
- Free First Year On-Site Service plus 24/7 Tech Support
- Upgrade to Sicuro RW360XL 2.1 Gaming Speakers for $75

AMD Athlon™ 64 X2 4400+ Processor	$ 979
AMD Athlon™ 64 X2 4200+ Processor	$ 879
AMD Athlon™ 64 X2 3800+ Processor	$ 795
AMD Athlon™ 64 3500+ Processor	$ 679
AMD Athlon™ 64 3200+ Processor	$ 629

$ 1039

GAMER XPLORER-64 3000

- **SIS Athlon™ 64 Chipset Motherboard**
- **Genuine Windows® XP Home Edition w/ SP 2**
- **512MB PC3200 DDR400 Memory**
- 40GB Ultra ATA100 Hard Drive
- **Mobile ATI® Radeon™ 9700 PRO 128MB Video**
- 15.4" WXGA Wide-Screen TFT Display 1280x800 Pixels
- 8X DVD+-RW Drive
- 10/100 Network Card & 56K V.92 Modem
- Wireless 802.11G 54Mbps Networking
- 3-in-1 Built-in Media Reader
- 1 Firewire IEEE 1394 & 4 USB 2.0 Ports; 1 PCMCIA Type II Slot
- Weight only 6.39 Lbs; Free Carrying Case
- 5 Custom Colors to Choose From
- One Year 24/7 Toll Free Tech Support
- Free Shipping

FREE SHIPPING

AMD Mobile Athlon™ 64 Processor 4000+	$ 1275
AMD Mobile Athlon™ 64 Processor 3700+	$ 1169
AMD Mobile Athlon™ 64 Processor 3400+	$ 1119
AMD Mobile Athlon™ 64 Processor 3200+	$ 1079
AMD Mobile Athlon™ 64 Processor 3000+	$ 1039

AMD 64 Athlon FX

AMD 64 Athlon

- **Provides leading-edge 32-bit performance for music, video, and games and is ready for future 64-bit software**
- **Improves security against certain types of viruses, with Enhanced Virus Protection for Microsoft® Windows® XP SP2**
- **Conserves power and operates quietly with AMD Cool'n'Quiet™ technology**
- **Features HyperTransport™ technology for improved multitasking performance**

CyberPower Inc.

4802 Little John St. Baldwin Park, CA 91706
Tel: (626)813-7730 • Fax: (626)813-3810
Technical Support (877)876-4965
Hour: Mon-Fri 8:30A.M. ~ 6:00P.M.
Sat 9:30A.M. ~ 3:00P.M.

All prices are subject to change without notice or obligation. CyberPower is not responsible for any typographical and photographic errors. Copyright © 2005 CyberPower. All rights reserved.

Copyrighted material

easy.

trust.

value.

expertise.

Authorized Dealer of KOOLANCE Liquid Cooling Products

FrozenCPU.com

128 TURK HILL OFFICE PARK . FAIRPORT . NY 14450

OVER 2700 REVIEWS

9.6 RESELLER RATINGS

Divinely Crafted Systems Built Exclusively for You

Feel the jaw dropping power of the AMD Athlon™ 64 FX processor, designed to make all your games play hyper fast, super high res and totally immersive.

AEON-8010

- ASUS A8N SLI Premium Motherboard
- Corsair XMS 1 GB Dual Channel DDR400 Memory
- NVIDIA® GeForce™ 7800GT PCI Express with 256MB DDR3 Video
- 250GB Serial ATA 7200 RPM Hard Drive
- 16x Dual Layer DVD+/-RW Drive; 16x DVD-ROM
- LEXA Gaming Case with Liquid Cooling System
- NVIDIA® nForce™ 4 8-Channel Surround Sound
- Gb Network LAN
- Microsoft® Windows® XP Home Edition

AMD Athlon™ 64 FX-60 Processor	$ 2359
AMD Athlon™ 64 X2 4600+ Processor	$ 1859
AMD Athlon™ 64 X2 4400+ Processor	$ 1719
AMD Athlon™ 64 X2 4200+ Processor	$ 1589
AMD Athlon™ 64 X2 3800+ Processor	$ 1495

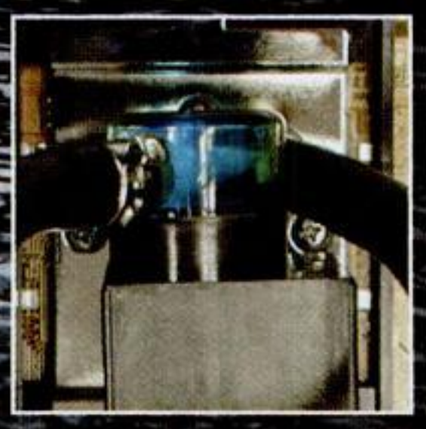
AEON-8015

- ASUS A8N SLI Premium Motherboard
- Corsair XMS 1 GB Dual Channel DDR400 Memory
- SLI Dual NVIDIA® GeForce™ 6800GS PCI Express with 256MB DDR3 Video
- 300GB Serial ATA 7200 RPM Hard Drive
- 16x Dual Layer DVD+/-RW Drive; 16x DVD-ROM
- LEXA Gaming Case with Liquid Cooling System
- NVIDIA® nForce™ 4 8-Channel Surround Sound
- Gb Network LAN
- Microsoft® Windows® XP Home Edition

AMD Athlon™ 64 FX-60 Processor	$ 2499
AMD Athlon™ 64 X2 4600+ Processor	$ 1999
AMD Athlon™ 64 X2 4400+ Processor	$ 1859
AMD Athlon™ 64 X2 4200+ Processor	$ 1739
AMD Athlon™ 64 X2 3800+ Processor	$ 1659

ALL SYSTEMS FREE SHIPPING!

Liquid Cooling System



AMD 64 Athlon FX

AMD 64 Athlon X2

800. 228. 9395

WWW.AEONCRAFT.COM

Copyrighted material

TOLL FREE 1-888-937-5580

XG ACTION 6000

- AMD Turion™ 64 Mobile Technology MT-32
  -AMD PowerNow! Technology
  -HyperTransport Technology
  -Enhanced Virus Protection Technology
- **Genuine Windows® XP Home Edition w/ SP 2**
- 15.4" WXGA Wide-Screen TFT Display 1280x800 Pixels
- Corsair 1024 MB Dual Channel DDR 400
- 80GB 5400 RPM SuperSlim Notebook Drive
- Mobile ATI® X700 16X PCI-Express 128MB Video
- 8X DVD+-RW Drive
- 802.11G 54MPS Wireless Network
- 10/100 Network Card, 56k V.92 Modem
- 1 Year 24/7 Toll Free Tech Support
- Free Shipping

$ 1245

XG XION 7000

- NVIDIA® nForce™4 SLI Dual 16X PCI-E Mainboard
- **Genuine Windows® XP Home Edition w/ SP 2**
- Corsair 1024 MB Dual Channel DDR 400
- 160GB Serial ATA 150 7200RPM 8MB Hard Drive
- Dual (2) NVIDIA® Geforce™ 6600 256MB 16X PCI-Express Video
- Sony 16X DVD+-RW Drive & Sony 16X DVD ROM Drive
- 7.1 nForce 3D Audion
- Logitech X530 5.1 Subwoofer Speakers
- Gigabit Network Card
- PCI 802.11G 54 Mbps Wirless Network Card
- 1 Year Onsite Service + 24/7 Tech Support

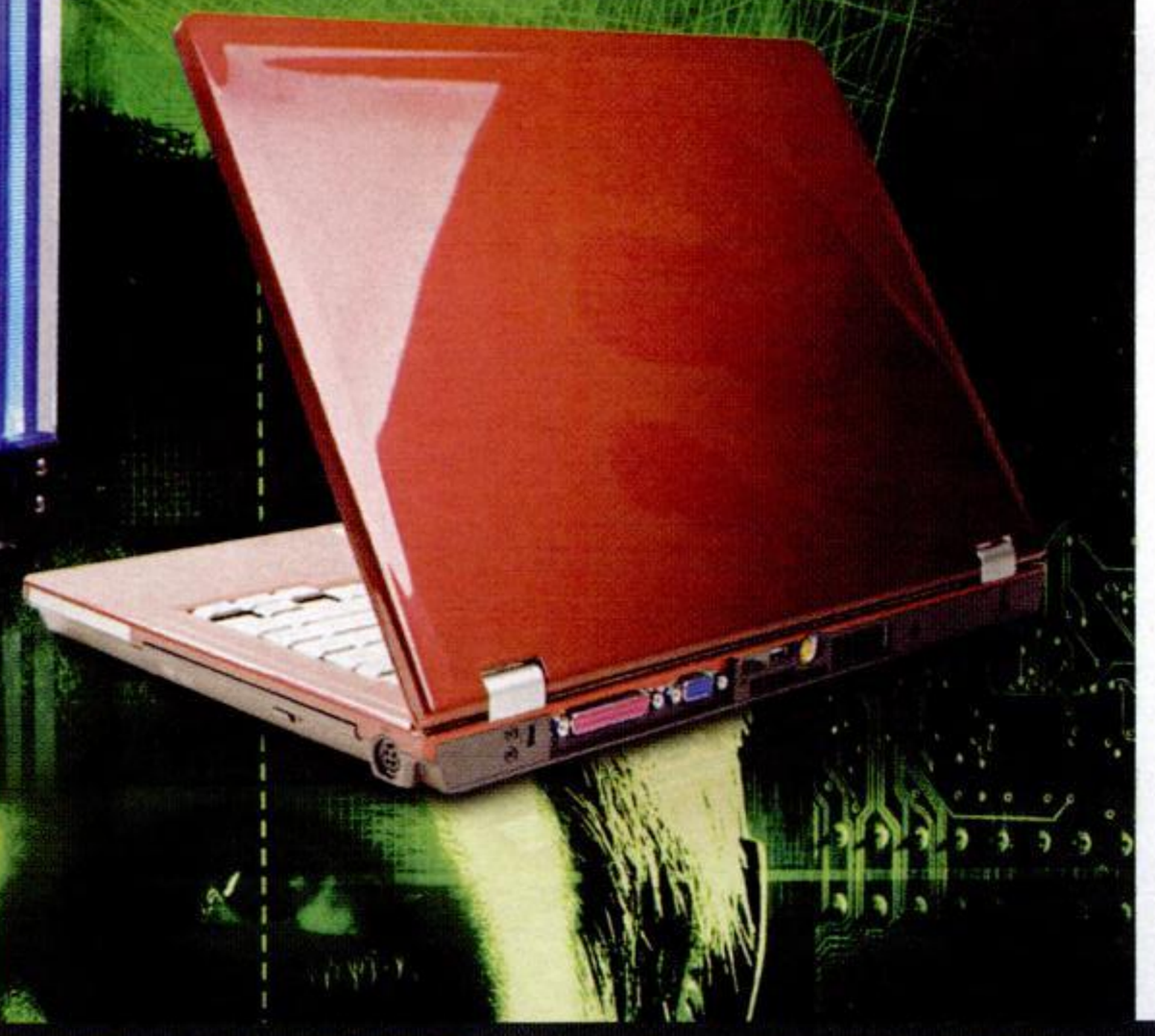
AMD Athlon™ 64 3800+ Processor **$ 979**

XTREME GEAR RECOMMENDS WINDOWS® XP

AMD Turion64 MOBILE TECHNOLOGY

AMD 64 Athlon

- Provides leading-edge 32-bit performance for music, video, and games and is ready for future 64-bit software.
- Improves security against certain types of viruses, with Enhanced Virus Protection for Microsoft® Windows® XP SP2.
- Features HyperTransport™ technology for improved multitasking performance.
- Conserves power and operates quietly with AMD Cool'n'Quiet™ technology.



WWW.BUYXG.COM

AMD®, the AMD® Arrow logo, AMD® Athlon™, and combinations thereof are trademarks of Advanced Micro Devices, Inc. All prices are subject to change without notice or obligation. XtremeGear is not responsible for any typographical and photographic errors. Copyright © 2005 XtremeGear. All rights reserved.

Copyrighted material

Genica 1000-Ft CAT5e Cable Kit w/Crimper/Tester

$48.50

Part #: CT-CAT5E-1000-6U

Mini Wireless Color Camera with Microphone

$26.95

Part #: 203C-50MW-N

ECS L4VXA2
VIA P4X400
Socket 478
ATX MB w/Snd

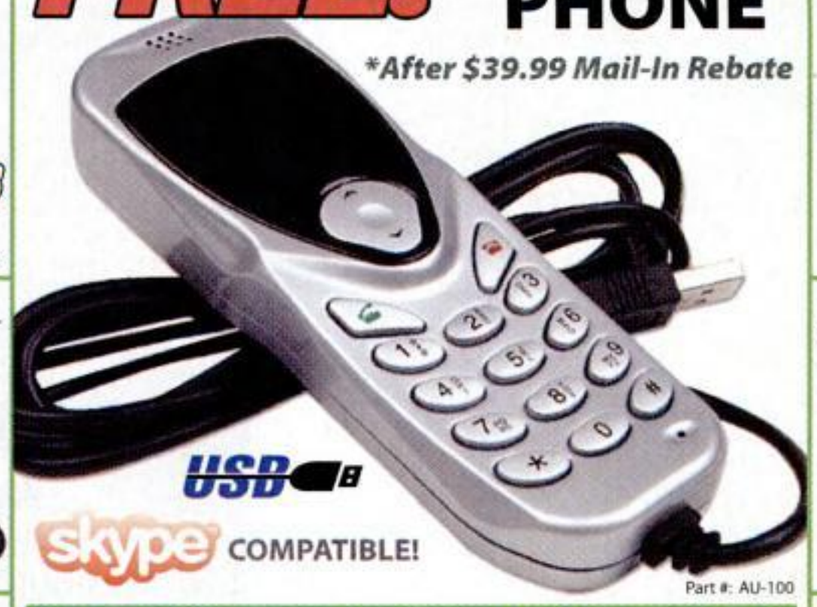
$14.95

Part #: L4VXA2

www.GEEKS.com

FREE!* VOIP PHONE

*After $39.99 Mail-In Rebate



USB

skype COMPATIBLE!

Part #: AU-100

Air Dash WRCB-1011R 802.11b Wireless LAN PCMCIA Card

$6.99

Part #: WRCB-1011R

802.11g 2.4GHz 54Mbps Wireless PCI Adapter

Wi Fi CERTIFIED

$14.99

Part #: WPC200G-001

Wireless Baby Monitor - IR/Color Cam & LCD Monitor

Sleep easier at night knowing that your baby is safe!

$65.99

Part #: BM-242A-N

Stealth Switch Desktop Cloaking Device

$19.99

Part #: STEALTHSWITCH

Virtual Reality Head-Mounted LCD Display

$99.99

Part #: GVD300-N

Power Judge ATX Power Supply Tester w/Over Voltage Detection

$6.95

Part #: ATX-2024-PT

A-Power 400-Watt ATX Power Supply

$9.99

Part #: AP400W

Huge Assortment of Gamer's Cases!

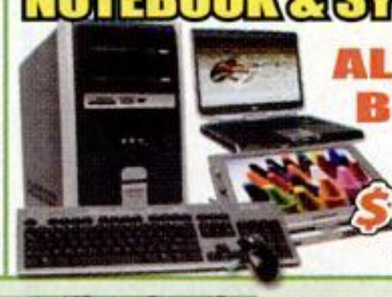
To receive the prices indicated in ths ad, enter the

SECRET SAVINGS CODE:

MAXFEB06

in the red promotional code field during checkout at GEEKS.com. Offer Expires 17.Feb.2006

NOTEBOOK & SYSTEM BLOWOUT!



ALL MAJOR BRANDS!

starting at under $100.00

HEWLETT PACKARD COMPAQ SONY Gateway IBM DELL TOSHIBA

COMPUTER GEEKS.COM

www.GEEKS.com

1890 Ord Way Oceanside, CA 92056

Phone: 760.726.7700

All offers subject to availability. Not valid with any other offer.
Logos & Trademarks are property of their respective owners.

VISA MasterCard DISCOVER AMERICAN EXPRESS

Get a computer today! Financing Available!

PayPal

FULL SERVICE MOD SHOP - WATERCOOLING - MOD / H2O SUPPLIES

AIRBRUSHED CASES

3D ETCHED WINDOWS

UV WATER TUBING

HANDCRAFTED H2O CASES

VOYEURMODS.COM

CALL US TODAY @ 1-505-415-4050// MON-FRI 10-5 MST

EXTERNAL WATERCOOLING

XTREME CPU COOLING

H2O LAN PARTY RIGS

PERFORMANCE LIQUIDS

AIRBRUSHING SERVICES - ONE OF A KIND CASES BUILT TO ORDER

FrozenCPU.com

www.frozencpu.com

"over the phone" or order online @ www.frozencpu.com

FREE T SHIRT WHEN YOU MENTION THIS AD!

FrozenCPU.com
128 Turk Hill Office Park
Fairport, NY 14450
1.877.243.8266

Worlds Largest

Selection of PC Modification Supplies

- Watercooling
- Cases
- Cables
- Cathode Lighting

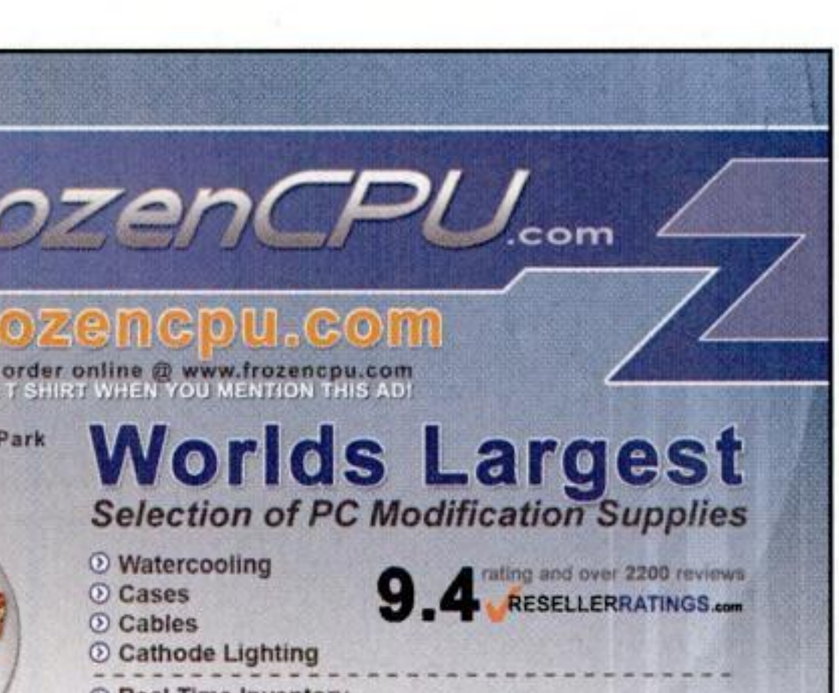
9.4 rating and over 2200 reviews RESELLERRATINGS.com

- Real Time Inventory
- Real Phone Support/Brick and Mortar Location
- Real People Dedicated to Customer Service for 5 years
- Real Same Day Shipping

Thermalright XP-90C (Intel and AMD) - COPPER

Koolance Exos-2 SILVER

Asetek WaterChill Hard Drive Cooler 3 1/2" bay



Copyrighted material

GET 5% OFF YOUR NEXT ONLINE PURCHASE

COUPON CODE: JABMAXPC5

5% off!

Thermalright SI 120 High Performance Heatsink

Asetek Vapochill Micro for Silent and Extreme Aircooling

Zalman 9500 Led Silent CPU Cooling

Computer accessories for the extreme user

www.jab-tech.com

Apex Extreme Liquid Cooling Kit

Jab-tech.com

9720 Kelley John Lane
Newalla, Oklahoma 74857

TOLL-FREE SALES HOTLINE
1-877-581-6078 10am to 6pm

SONY Vegas Movie Studio+DVD

Video Editing and DVD Creation Software

SONY

The Fun, Easy Way to Create Digital Family Memories
Creating and sharing stunning movies and slide shows doesn't have to be complicated. Vegas Movie Studio+DVD video editing and DVD creation software eliminates the guesswork so you can jump straight to the fun part – bringing your digital video and pictures to life! With Sony's Exclusive Show Me How tutorials to guide you, you'll be adding titles, transitions, effects, and music to your project within minutes of loading the software. From camera to screen in 3 easy steps:

$75.00

1. Capture: It's easy to transfer videos and digital photos to your computer. Vegas quickly imports and organizes your digital media so you can start creating faster. It even works great with DVD camorders allowing you to edit right off of the DVD disc!

2. Edit: Use simple actions such as drag-&-drop to create movies & slideshows with effects, transitions, and music. Make changes on-the-fly and see the results instantly.

3. Share: Powerful tools let you burn your movie to DVD, VCD, CD, and export to other formats like QuickTime® and Windows® Media®. Share your creations with friends and family!

Videoguys' Exclusive Bundle
Get the Vegas Movie Studio+DVD with the ADS Pyro AVLink media converter to capture all of your older analog footage through your PC's built-in FireWire connection for editing in Vegas! $169.95 After Rebate

SONY SoundForge 8

Professional Audio Editing on Your PC

Sound Forge® software is the tool of choice for media professionals who want to create & edit digital audio files with absolute speed & precision. Acclaimed for its power, stability, and no-nonsense interface, it's the fastest way to get from raw audio to finished master. Sound Forge software is everything you need to analyze, record, and edit audio, produce music loops, digitize and clean-up old recordings, model acoustic environments, create streaming media, and master replication-ready CDs.

$179.95 After Rebate

VIDEOGUYS.com

LEADING THE WAY INTO HD- WE ARE THE VIDEO EDITING & PRODUCTION EXPERTS

Say you saw us in... MAXIMUMPC
Go to www.videoguys.com/max and we'll send you a $10 off coupon!

800-323-2325 • www.videoguys.com

10-12 Charles St., Glen Cove, NY 11542 • 516-759-1611 • Fax 516-671-3092 • sales@videoguys.com

CRAZYPC.com

www.crazypc.com

HUGE Selection of CASE Modding Supplies, PC Cooling, & Accessories

1-888-558-6005

5% OFF Coupon*

Enter Coupon Code:

CPCMAXPC

Thermaltake AquaBay M1

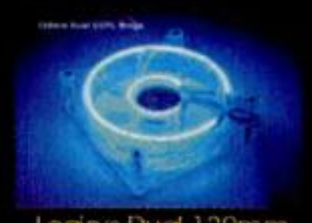
Case mods • PC Cooling • Gaming Accessories • Water Cooling • Cold Cathodes • Cables • Hard to Find Accessories

Logitech G15 Gaming Keyboard

FREE T-Shirt w/DX1 Purchase

Ergodex Dx1 Input System

World's most customizable input device that let's you put they keys where you want them.



Logisys Dual 120mm Cold Cathode Fan

1046 Benstein Rd. STE 107
Walled Lake, MI 48390
1-888-558-6005 Mon-Fri 9am-5pm

Platinum Plus Reseller Rating

* Expires 3/31/06. Excludes some items (DACAL Libraries, Prometeia, Auravision, Lian-Li Cases.)

© 2005 CrazyPC. All Rights Reserved.

KRALL KOMPUTERS

OVERCLOCKING SPECIALISTS!!!

•PC MODS
•LED's
•HARDWARE
•SUPPORT FORUM

WWW.KRALLKOMPUTERS.COM

Copyrighted material

GoGamer.com

Where Gamers Go...

Huge Selection of PC and Video Games

Play More, Pay Less

HighSpeed PC

Specialty Computer Hardware

HSPC Tech Station Fast-Access Computer Case!

"The Tech Station (patent pending) is a hardware workbench bringing PC parts within easy reach yet keeping them safe and secure. Perfect for PC builders, upgraders, and overclockers."

- HDD storage/cooling rails for up to two 3.5" hard drives
- AGP/PCI card support brace w/thumb screws (no loose add in cards!)
- ATX Control Kit (mini power/reset switches, LED's speaker)
- 120mm fan for ideal cooling
- Anti-static and non-conductive!
- Standard, Large, and custom sizes/colors available

"HDD storage/cooling rack"

"APG/PCI support brace"

"ATX Control Kit"

www.highspeedpc.com

Professional PC Diagnostic Tools

Meet Your New Assistant.

Professional Kit

Complete Diagnostic Solution for Mobile PC's

Mini Professional Version Also Available for Mobile PC's

You don't have time for trial and error or tools and methods that only provide part of the picture. That's why Ultra-X's Professional Kit- with its quick & accurate diagnostics, helps you detect and isolate problems. Whether you are building new PC systems, providing PC repair services or keeping your fleet of mobile PC computers running smoothly, take a closer look to see how this kit will make your job a whole lot easier.

Quick. Simple. Accurate.

Random Lockups?

Fatal Exception Errors?

Mystery BSoDs?

Games Freezing?

NO PROBLEM!

Quickly & Accurately Isolate Issues!

ULTRA-X, INC
www.uxd.com

FOR MORE INFORMATION:
1.888.722.3734
Fax: 1.909.946.7639 Email: sales@uxd.com

Win Rig of the Month AND WIN BIG!

If your modded PC is chosen as a Rig of the Month, it will:

1. Be featured before all the world in *Maximum PC*
2. Win you a $500 gift certificate for TigerDirect.com

SO WHAT'S STOPPING YOU?

TO ENTER: Your submission packet must contain your name, street address, and daytime phone number; no fewer than three high-res JPEGs (minimum size 1024x768) of your modified PC; and a 300-word description of what your PC represents and how it was modified. Emailed submissions should be sent to **rig@maximumpc.com.** Snail mail submissions should be sent to Rig of the Month, c/o Maximum PC, 4000 Shoreline Court, Suite 400, South San Francisco, CA 94080.

The judges will be *Maximum PC* editors, and they will base their decision on the following criteria: creativity and craftsmanship.

ONE ENTRY PER HOUSEHOLD. Your contest entry will be valid until (1) six months after its submission or (2) October 15, 2006, whichever date is earlier. Each month a winner will be chosen from the existing pool of valid entries, and featured in the Rig of the Month department of the magazine. The final winner in this contest will be announced in the January 2007 issue. Each of the judging criteria (creativity and craftsmanship) will be weighed equally at 50 percent. By entering this contest you agree that Future US, Inc. may use your name and your mod's likeness for promotional purposes without further payment. All prizes will be awarded and no minimum number of entries is required. Prizes won by minors will be awarded to their parents or legal guardians. Future US, Inc. is not responsible for damages or expenses that the winners might incur as a result of the Contest or the receipt of a prize, and winners are responsible for income taxes based on the value of the prize received. A list of winners may also be obtained by sending a stamped, self-addressed envelope to Future US, Inc. c/o Maximum PC Rig of the Month, 4000 Shoreline Ct, Suite 400, South San Francisco, CA 94080. This contest is limited to residents of the United States. No purchase necessary; void in Arizona, Maryland, Vermont, Puerto Rico, and where prohibited by law.

Copyrighted material

We tackle tough reader letters on...

✓Advertising and Magazines ✓More on Thermal Paste ✓$300 PC ✓MP3 Mistake

WHERE'S THE 940BF?

January issue's "Best of the Best" lists the Samsung 940BF as a new entry for desktop LCD monitor; and the "Versus" feature in the same issue contrasts it with the Viewsonic VX924, with the 940BF getting the nod.

Unfortunately, I couldn't find the monitor for sale anywhere!

I've telephoned Samsung a number of times over the last week, only to be told I'm not talking to the appropriate department. One tech-support rep went so far as to say that I did not navigate the initial telephone menu properly.

Samsung has yet to post a product-info page for the 940BF, though it does offer a support page containing a driver and user manual. Where can a person actually buy this monitor?

—Malik Mitchell

MANAGING EDITOR KATHERINE STEVENSON RESPONDS: Sorry about the confusion, Malik. We've heard from a number of readers who were similarly frustrated at not being able to track down the LCD after reading our glowing praise. A Samsung rep tells us that a production delay is to blame, and that by the time you read this the 940BF will be available through retailers.

In another twist, these monitors will feature a 2ms pixel response time, down from the 4ms of the model we reviewed.

A WORD ABOUT OUR SPONSORS

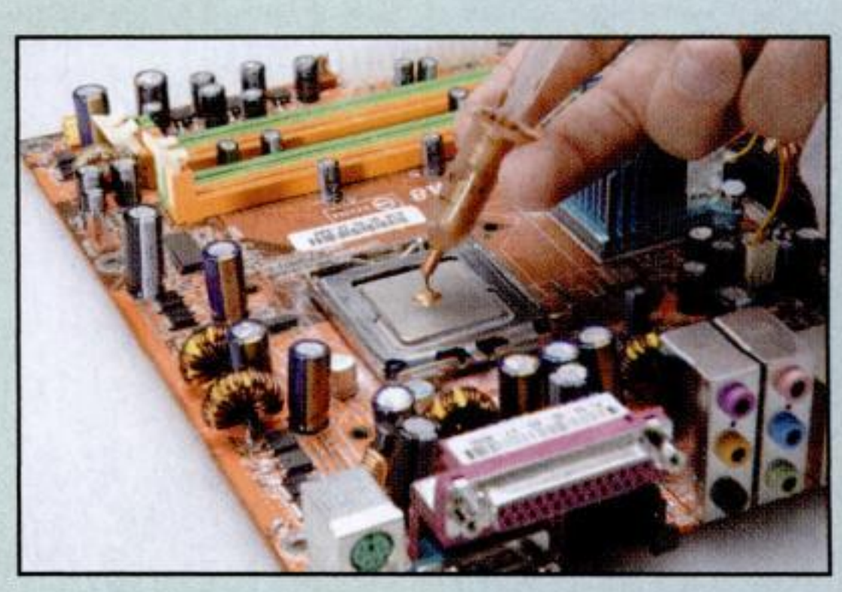
Regarding your December 2005 issue: Is it one huge advertisement? Thirty-two pages of a wireless gaming guide from Cingular? And I thought the multi-page ads from 1&1.com were bad. Come on, guys, are you really hurting for money that badly? If you want to subject the people who purchase your mag off supermarket shelves to this kind of crap, that's fine. But don't do this to your regular, paying customers. I've been reading ***Maximum PC*** *since the beginning, but you might have lost me as a subscriber for this. It's a shame too, as there are no other computer magazines like* ***Maximum PC****.*

—David McGrath

EDITORIAL DIRECTOR JON PHILLIPS REPLIES: While we won't run ads from pornographers, cigarette cartels, and companies that have been proven to be fraudulent, we will run pretty much any tech-related advertising that comes our way. Please keep in mind that increased advertising doesn't "bump out" pages of editorial content. We are committed to providing a minimum number of editorial pages in every issue in order to justify our subscription and newsstand cover prices. Whether we miss our mark, well, that's the readers' call. But we are sensitive to the fact that readers are paying money for editorial content and not ads.

Despite the fact that newsstand sales and advertising revenues for all computer magazines have been sliding for quite a few years now, we are not hurting financially, no. But magazine publishing is a business just like any other, and the goal of every business is to make money. Revenue generation is even more important for public companies like Future US. Public companies are like sharks: If they remain still, they die. Going backwards (that is, losing money) spells a quicker death, and so the only acceptable course of action is growth. And that means the tireless pursuit of the almighty dollar. Welcome to capital-

More on Thermal Paste



I'd like to address your report on thermal pastes in the January 2006 issue (In the Lab). While I have no problem with your testing methods, I do take issue with the time frame. Arctic Silver's instructions clearly state that, "Due to the unique shape and sizes of the particles in Arctic Silver's conductive matrix, it will take up to 200 hours and several thermal cycles to achieve maximum particle-to-particle thermal conduction and for the heatsink-to-CPU interface to reach maximum conductivity. Measured temperature will often drop 2 C to 5 C over this 'break-in' period." It similarly states that temperatures will drop "slightly" after the break-in period of 25 hours for the Arctic Ceramique. I applaud your efforts to determine the most effective thermal paste, but question the wisdom in not following manufacturer specifications while doing so.

—Dudie Silberman

SENIOR EDITOR JOSH NOREM RESPONDS: You're right, Dudie. We should have tested the Arctic Silver for more than 200 hours to achieve results that would be considered totally accurate. We didn't do this for two reasons. We don't really have time or hardware to dedicate a machine to a 10-day test, while the Arctic Silver sets in. Second, we didn't think it would make much difference even if we did wait around for 10 days. But just to be on the safe side, we decided to get the info straight from the horse's mouth, so we called Arctic Silver. They told us we'd see a "very small" difference if we let the paste set for 200 hours. This wasn't designed to be a rigorous scientific study but more of a quick-and-dirty test. That said, we should have mentioned the AS5's break-in period in the article.

The topic of break-in periods for thermal paste has actually been on my mind lately, as I test many cooling products and all of them use thermal paste of some sort. Just to be on the safe side, for future testing we've procured some Arctic Lumiere, which has a 30-minute break-in period.

Copyrighted material

ism, David! Yeah, it bugs me sometimes too.

Now, all of the above sounds ugly, but there's a positive angle to this sordid, sordid tale: While Future US is indeed a capitalist, for-profit enterprise, it's also one of the few publishing companies that actually respects the intelligence and sensibilities of its readers. And for this very reason, upper management (like myself) is allowed the freedom to tell it like it is. So let me do so: I personally feel that huge advertising sections are a nuisance to the basic magazine-reading experience. So I respect your chagrin. Likewise, I'm still pissed off that the Cingular advertorial section wasn't labeled as "paid advertising." It should have been, and I've raised a huge stink about this oversight with our sales people. Rest assured, we will not run advertorial content without the appropriate label again.

With all that said, I also know that ads (and advertorial) help a magazine stay in the black. Ads are a life-sustaining ingredient. Money earned from advertising inserts helps us build equity for long-term survival, and I for one would like to see ***Maximum PC*** published in perpetuity.

I <3 THE $300 PC

I have been waiting a very long time for someone to say, "It's okay to own a $300 PC" (January 2006). I myself own several computers, and the one thing I have noticed most is that as computing hardware advances, it takes less and less hardware to "get the job done" every year. You can get a lot of work done on an Athlon XP 1600, with 512 MB of RAM, a decent-size hard drive, and a good flat-screen CRT. And if configured properly, you would have a very hard time telling the difference between that modest rig and a 3GHz machine. For common office tasks in ***Word, Excel, Firefox****, etc., a slow machine is fine! I find it quite fun to try to squeeze more life out of an old box. It's definitely more of a challenge than laying down the plastic and buying new hardware!* ***Maximum PC*** *should mean "Maximize your PC."*

—John McInturff

EDITOR IN CHIEF WILL SMITH RESPONDS: The thing that surprised us more than anything else about the $300 PC is how much use we could actually get out of the thing. For the money, it's quite a powerful rig, and is faster than my high-end rig of five years ago.

ONLINE SURVEYS CAUSE BIRD FLU

I just looked over the January 2006 issue. The Reader Survey caught my eye. It seems primitive to take scissors, cut out the survey, fill it in, put it in an envelope, and finally mail it to you!

This is 2006 man! I want to fill in surveys online. Can you get up to date? The prize in the drawing is intriguing to me, but not intriguing enough for me to deal with the hassle of snail mail.

—Jeff Rodgers

EDITOR IN CHIEF WILL SMITH RESPONDS: Sadly, this is one instance where technology isn't a good thing. We ask people to mail in the original copy of their survey so they won't be tempted to enter multiple times, in violation of the rules. The last time we ran a contest with an online form, some unscrupulous types entered themselves hundreds of times. Look at it this way: If you take the time to cut out the form and send it in, your odds of winning are much better than they would be with an online contest!

DON'T BE A PLAYER HATER

I read your review of the iAudio X5 (December 2005), and I disagree with your conclusions. The X5 is a music player with video capabilities. Some of the things you miss in your review include that the player belongs in the top range of sound quality, plays a wide variety of audio files (including FLAC), supports drag and drop for all files, and works with most operating systems including Linux.

—Jasper Rutjes

A CONTRITE LOGAN DECKER RESPONDS: I assure you that those things were taken into account and weighed to varying degrees on our verdict. We asked Cowan for a portable video player and the X5 is what they sent, so that's how we reviewed it.

Even considered purely as a music player it doesn't stack up. While it does have advantages (especially the FLAC support—love that), its battery life isn't particularly good, unless you get the more expensive version with the extra long battery. Furthermore, the player's controls are a real deal-breaker. The five-way joystick is a drag to use, and the music-browsing interface is inexcusable for a player with this large a capacity.

So we put the challenge to you: Borrow a friend's video iPod, and go check out Apple's video iPod or iPod nano, and tell us which one is easier to use. MPC

LETTERS POLICY: ***MAXIMUM PC*** invites your thoughts and comments. Send them to **input@maximumpc.com.** Please include your full name, town, and telephone number, and limit your letter to 300 words. Letters may be edited for space and clarity. Due to the vast amount of e-mail we receive, we cannot personally respond to each letter.

COMING NEXT MONTH IN MAXIMUMPC'S DANGEROUSLY CHEESY MARCH ISSUE

MAXIMUM PC'S GUIDE TO OVERCLOCKING

Do you feel the need? The need for speed? Well then lock and load Iceman, because we're about to push your CPU to the limit! This must-read guide shows you everything you always wanted to know about overclocking, including overclock tests with air, water and phase change coolers!

2005 GAMING AWARDS

Bust our your cumberbund, because you're invited to the ritzy, invite-only Maximum PC 2005 gaming awards! Join us in honoring the year's best—and worst—in PC gaming. You'll be surprised to see which game won our "Best use of feces" award!

MODERNIZE WINDOWS XP!

You installed Windows XP four years ago, and haven't done diddly squat to it since then. Don't worry: We're going to show you how to bring your XP install up to date! Our handy how-to will help you add advanced search, widgets, improved security and much, much more!

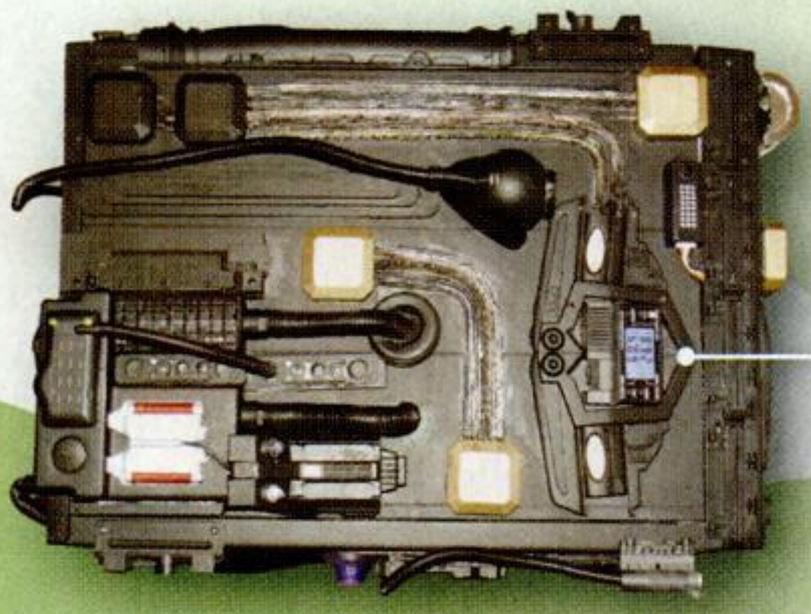
Sponsored by TigerDirect.com The Best Computer Deals, Anywhere!

CHRIS KRAMER'S

Borg Cube

Sprung from a double-wide server case on wheels, this Borg Cube might not inspire quite the fear as the same-named spacecraft that hounded the U.S.S. Enterprise. It might not even be a precise replica of that ship. But Chris Kramer's mod—his first effort, in fact—clearly possesses the cyborg spirit of assimilation. This rig really looks like it rolls through life effortlessly apprehending and adapting to bits and pieces of any hardware that stands in its path. Resistance is futile, as they say.

The case sports two 6-inch phosphor- and gas-filled Plasma Disks connected to a 12V DC transformer. When voltage is sent through a central electrode, a lightning-like path is created.



Various hardware parts and toy pieces are attached to the case with either screws, plastic cement, carpet tape, or tiny magnets, depending on the surface.

The 5.25-inch drive bays hold a CD-RW drive, a DVD+/-RW drive, a speaker, a Sunbeam lightbus controller, and an AeroCool temp/fan/volume control panel.

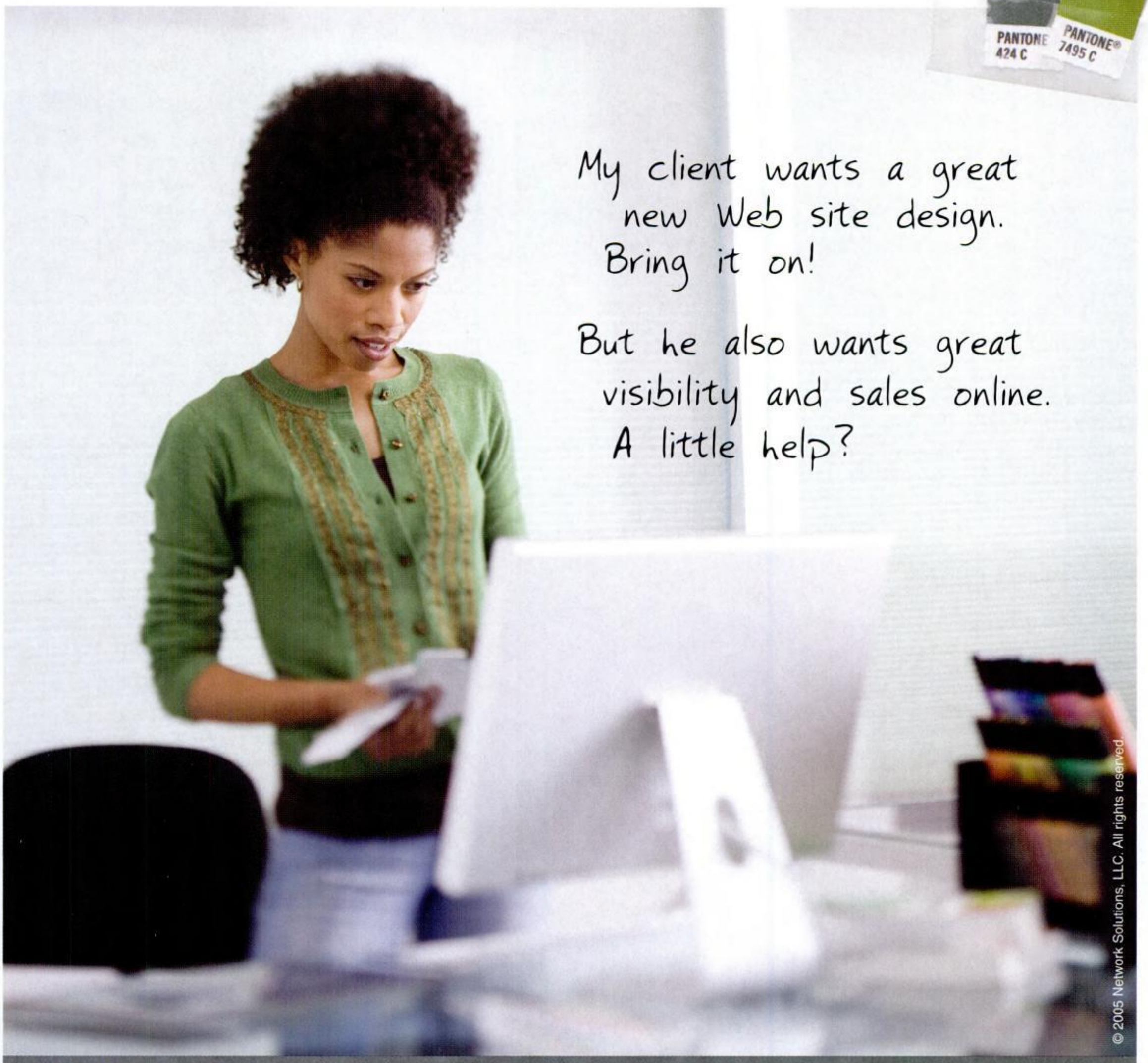
The rig's 3.4GHz P4 CPU doesn't need extreme cooling, but Kramer equipped it with a hybrid water-cooling system anyway—mainly "to eliminate the CPU fan and have glowing green fluid-filled tubing running around inside the case," he says.

For his winning entry, Chris Kramer wins a $500 gift certificate for TigerDirect to fund his modding madness! See all the hardware deals at www.tigerdirect.com, and turn to page 93 for contest rules.

If you have a contender for Rig of the Month, e-mail **rig@maximumpc.com** with high-res digital pics and a 300-word write-up.

MAXIMUM PC (ISSN 1522-4279) is published monthly by Future US, Inc, 4000 Shoreline Court, Suite 400, South San Francisco, CA 94080, USA. Periodicals postage paid in South San Francisco, CA, and at additional mailing offices. Newsstand distribution is handled by Curtis Circulation Company. Basic subscription rates: one year (13 issues) US: $20; Canada: $26; Foreign: $42. Basic subscription rates "Deluxe" version (w/CD): one year (13 issues/13 CD-ROMs) U.S.: $30; Canada: $40; Foreign $56. US funds only. Canadian price includes postage and GST (GST#R128220688). Postmaster: Send changes of address to Maximum PC, P.O. Box 5159, Harlan, IA 51593-0659. Standard Mail enclosed in the following edition: None. Ride-Along enclosed in the following editions: B, C, C1, C2, C3, C4. Int'l Pub Mail# 0781029. Canada Post Publications Mail Agreement #40043631. Returns: 4960-2 Walker Road, Windsor ON N9A 6J3. For customer service, write Maximum PC, P.O. Box 5159, Harlan, IA 51593-0659; Maximum PC, 4000 Shoreline Court, Suite 400, South San Francisco, CA 94080. Future Network USA also publishes PC Gamer, PSM, MacAddict, Official Xbox, and Scrapbook Answers. Entire contents copyright 2006, Future Network USA. All rights reserved. Reproduction in whole or in part is prohibited. Future Network USA is not affiliated with the companies or products covered in Maximum PC. PRODUCED AND PRINTED IN THE UNITED STATES OF AMERICA.

Copyrighted material


PANTONE 424 C
PANTONE® 7495 C
My client wants a great new Web site design. Bring it on!
But he also wants great visibility and sales online. A little help?
© 2005 Network Solutions, LLC. All rights reserved.

Your Web design clients need to get noticed, get traffic, get customers and get sales. We can help you help them—with search engine placement and optimization, directory listings, targeted online ads and online sales. Call or visit us to learn more, and to find out all the ways we can help take your business farther.

Affordable Web Hosting
Domain Registration
Real-Person Customer Service™
»**Online Sales & Marketing Tools**
SSL Certificates
...And More

from $24.95 mo for online marketing services

Call or click: **1.866.455.2005** | **www.networksolutions.com**

NetworkSolutions®

Go Farther™

Copyrighted material

Systemax™

Systemax Recommends Microsoft® Windows® XP Professional

DO MORE WITH MORE

Get more, do more, and enjoy more with a Systemax TigerShark featuring the Intel® Pentium® D Processor, thanks to new dual-core processing. Two full processing cores mean an extra powerful gear when you need it so you can accomplish more while playing multiple player online games.

American Power and Freedom. By Systemax
Every Systemax PC and Notebook is Assembled, Serviced and Supported by our own team - right here in America. Youcan expect the best value - and the best services. Plus, any ofour notebooks and desktops are completely customizable.

Available At:

TigerDirect.com **Or Call 1-888-844-3797**
www.TigerDirect.com/MaxPC

intel inside
pentium® D

Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Copyrighted material